TECHNOLOGY DEPARTMENT

Gas Journal

Vol. 254. 100th Year. LONDON, JUNE 2, 1948. No. 4435. Price 1/-

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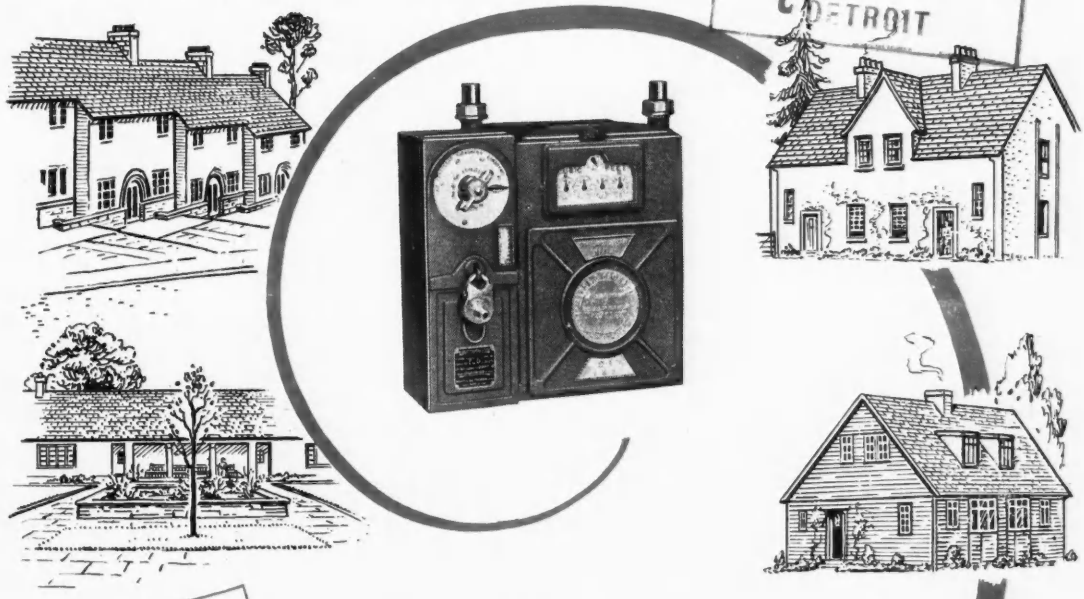

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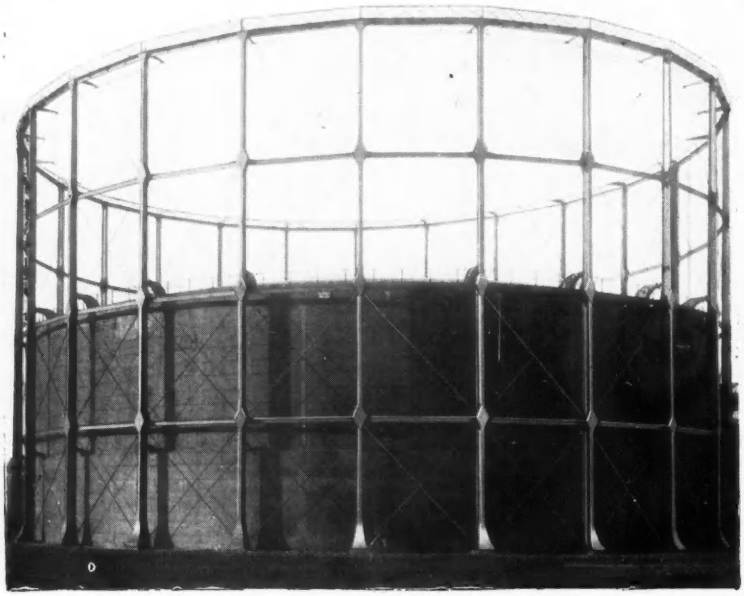

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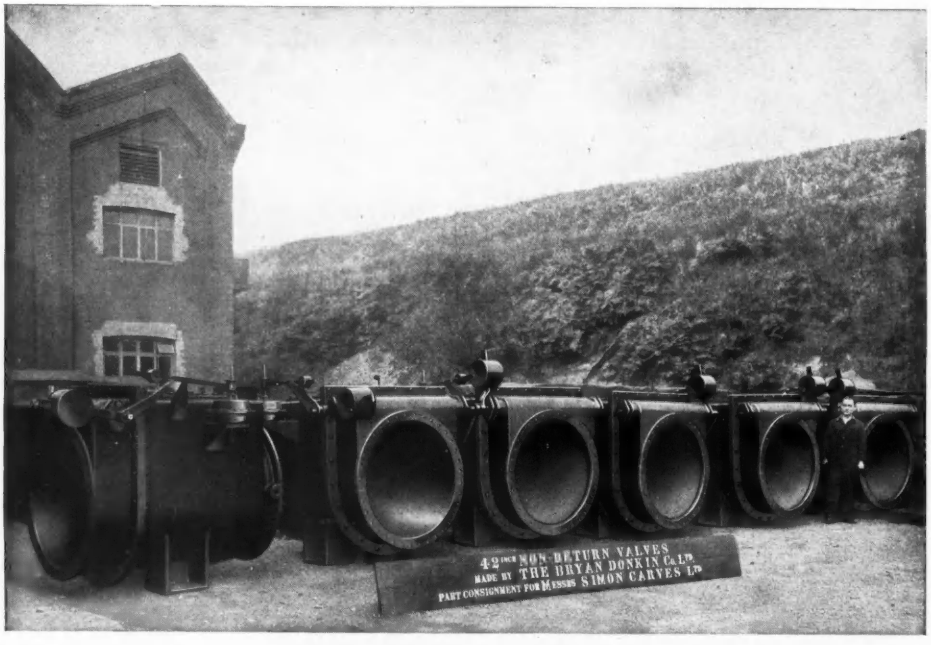

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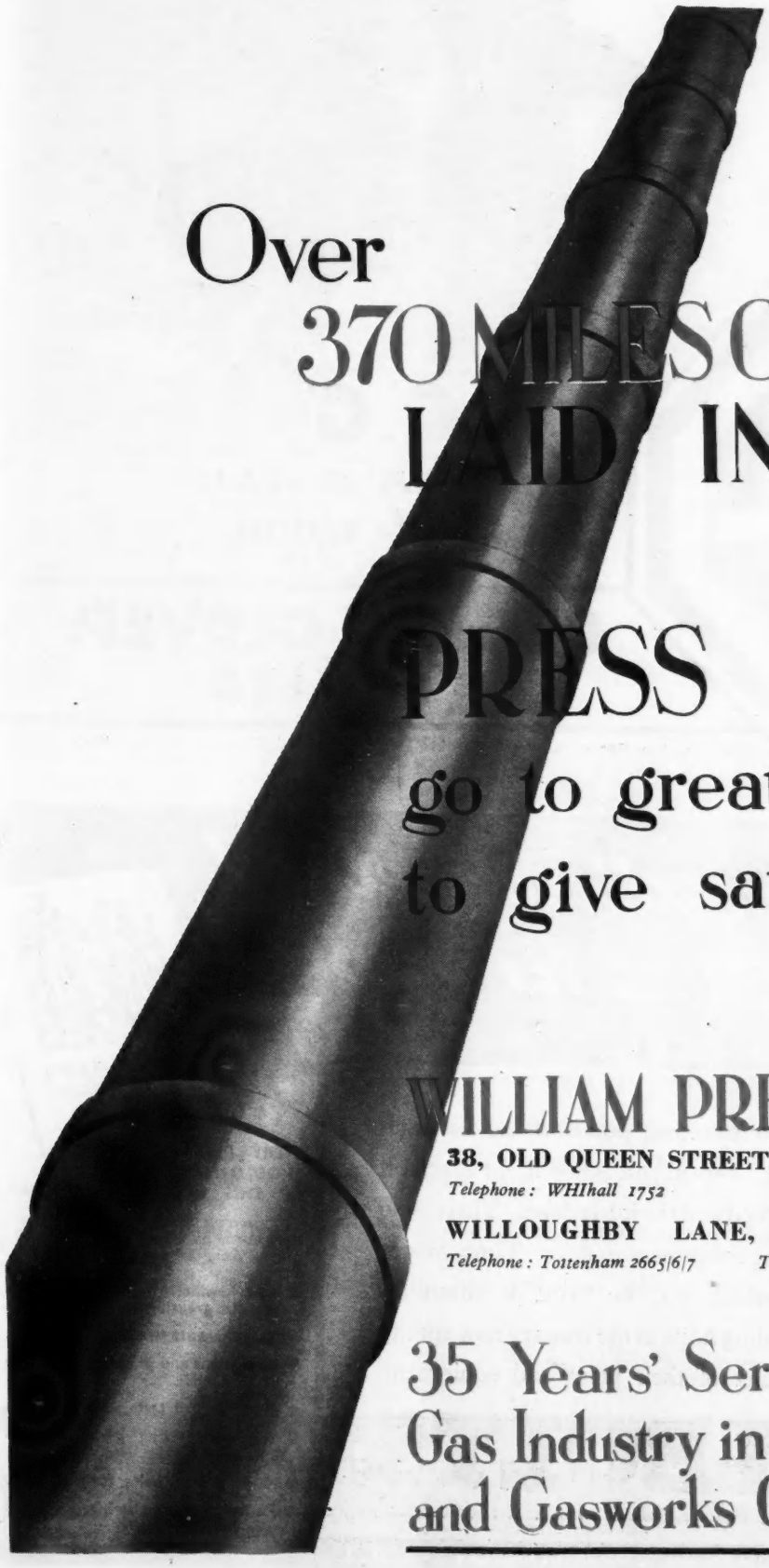

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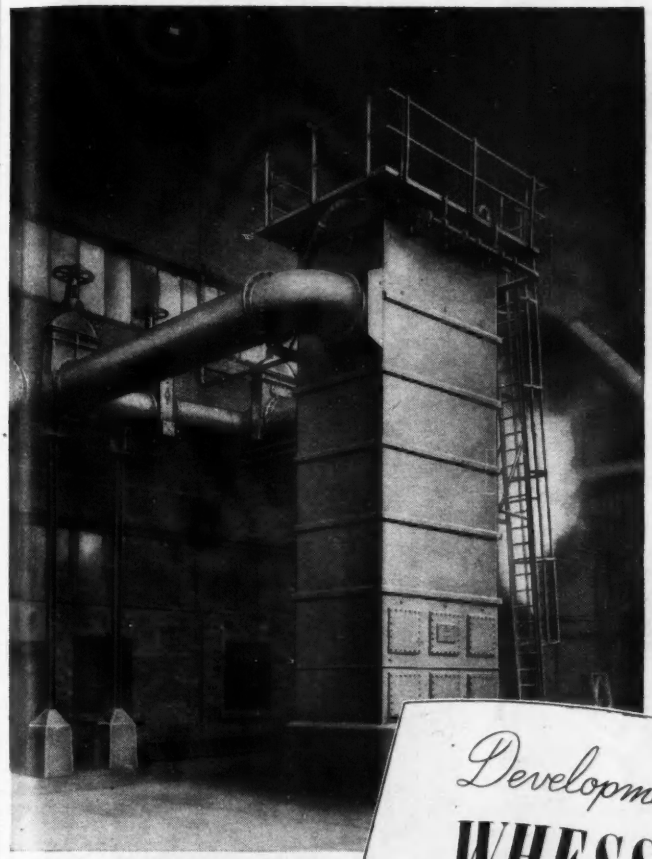

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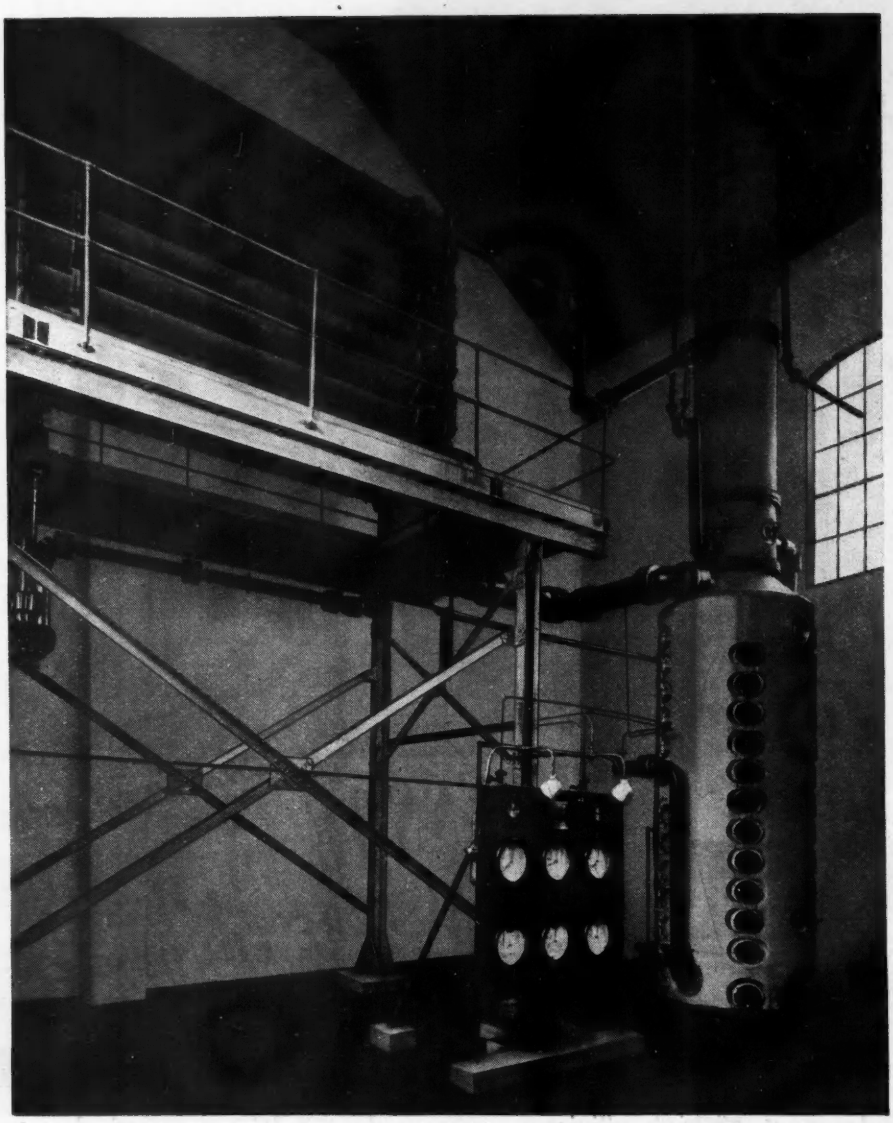

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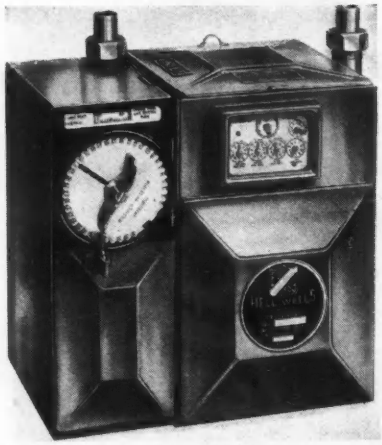

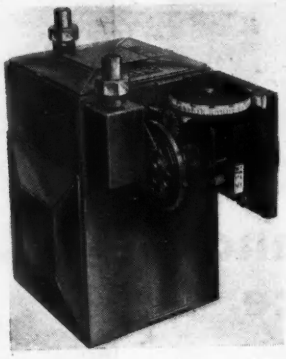

The four features of the Helliwell prepayment mechanism, shown here, warrant the careful consideration of the Gas Engineer.

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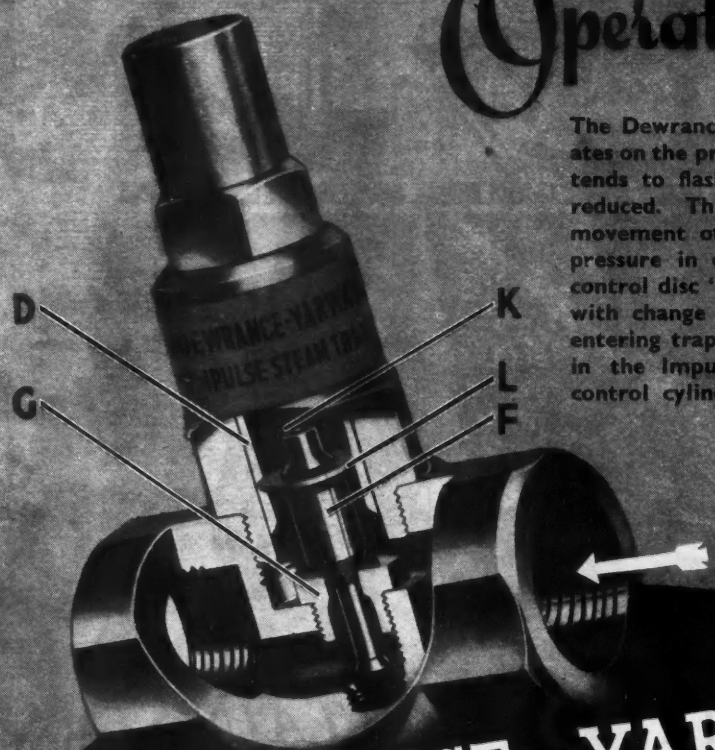

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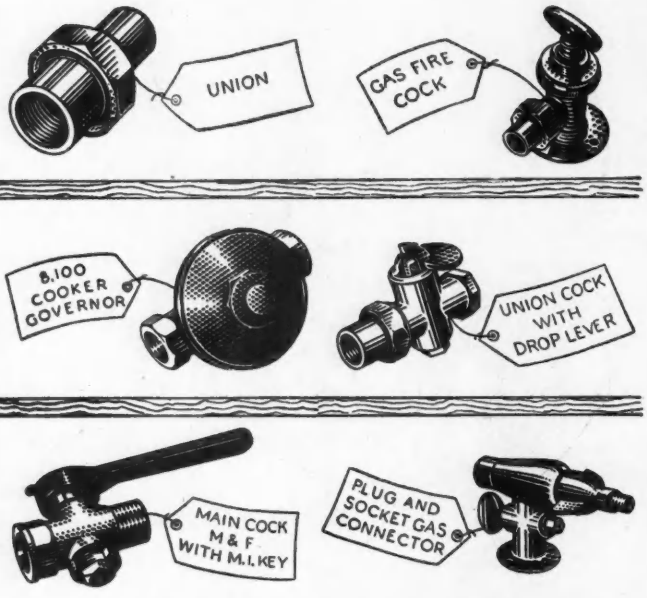
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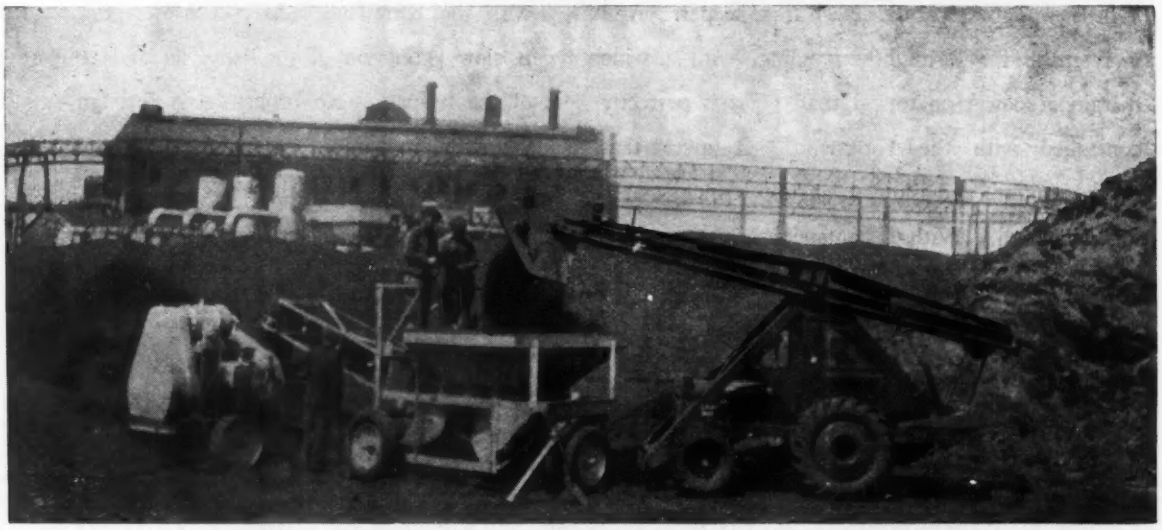

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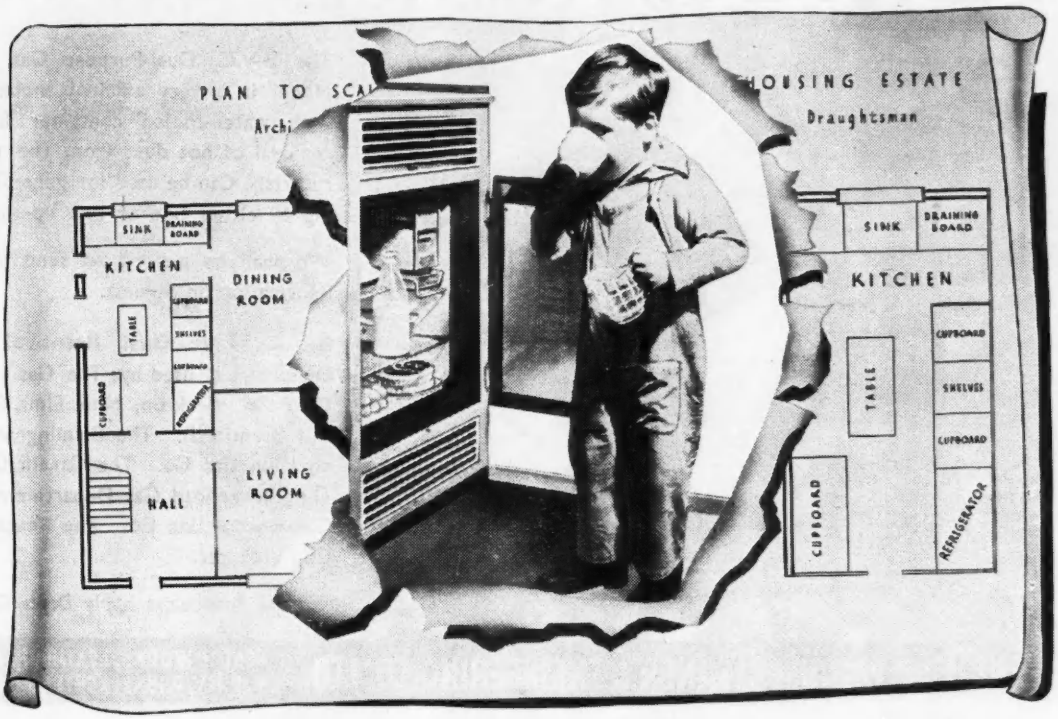

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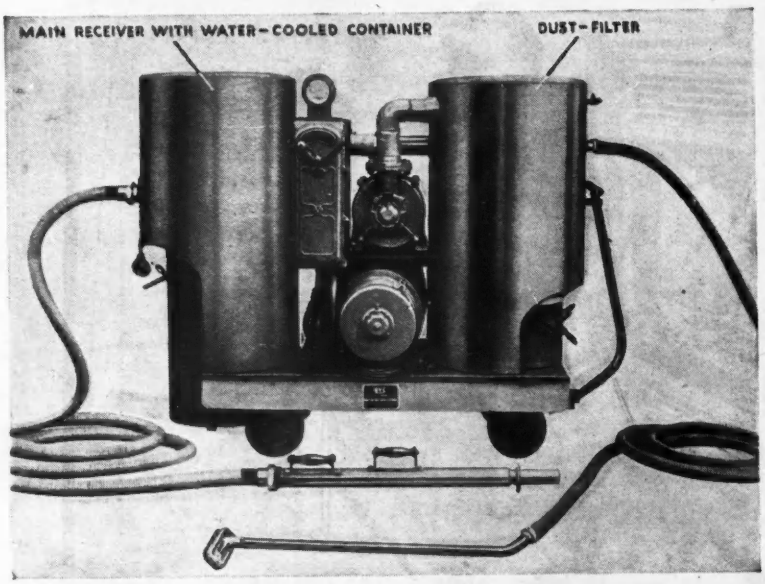

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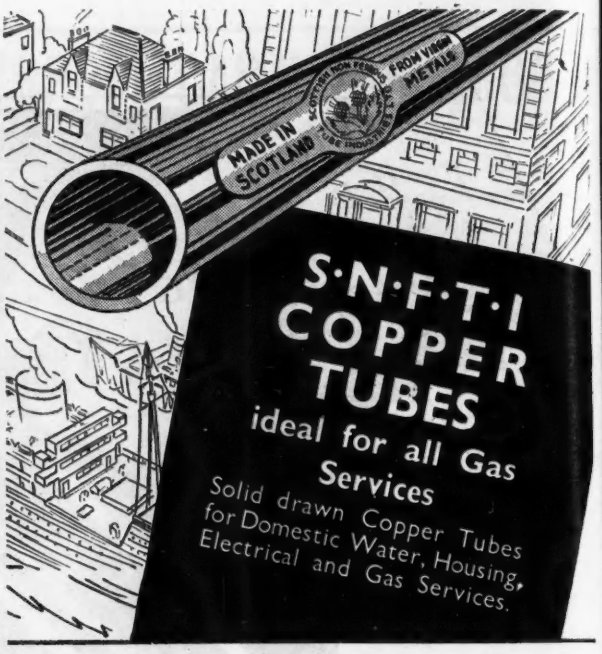
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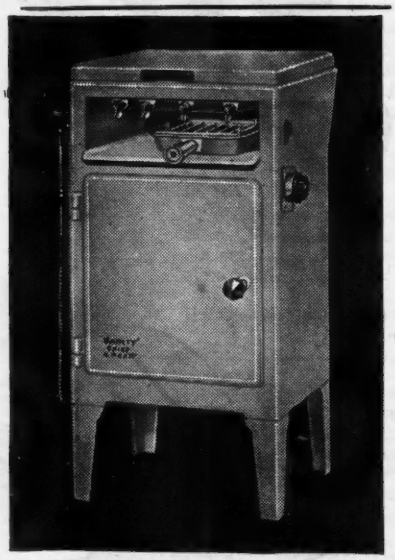

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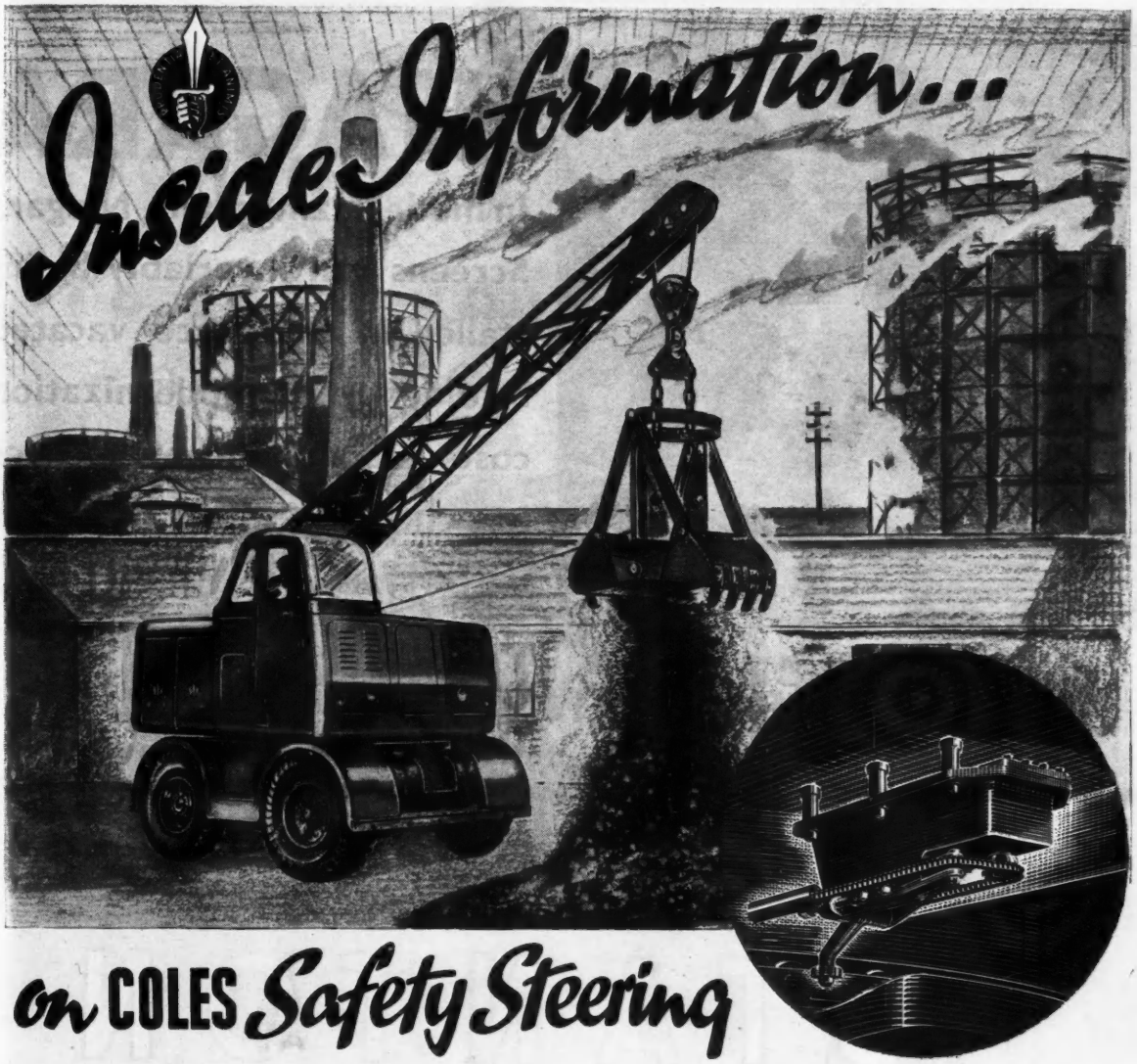

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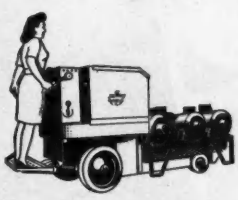

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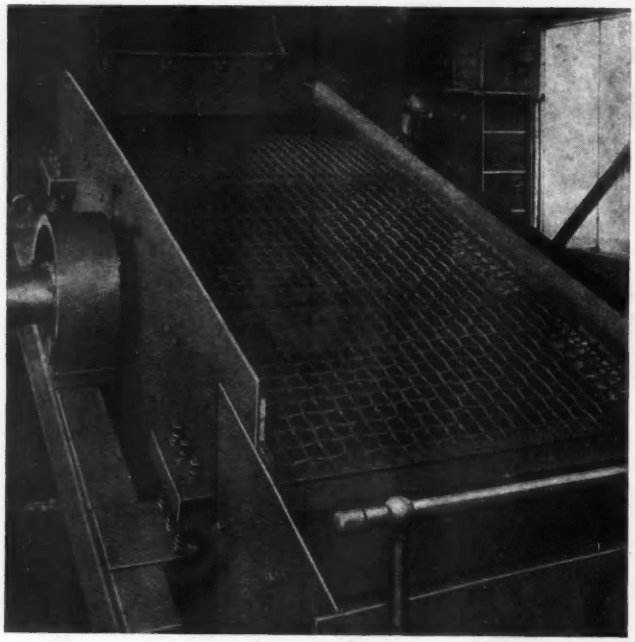

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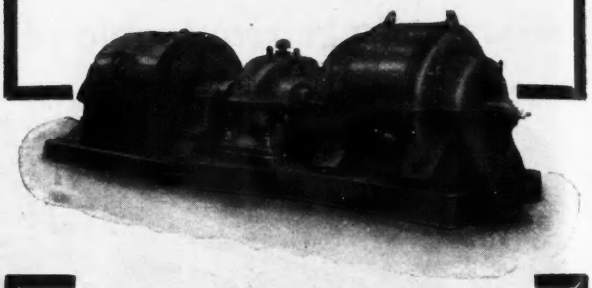

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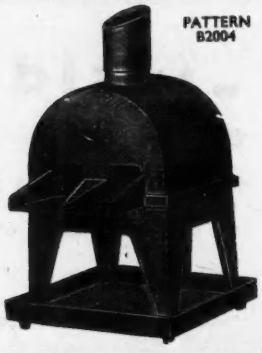

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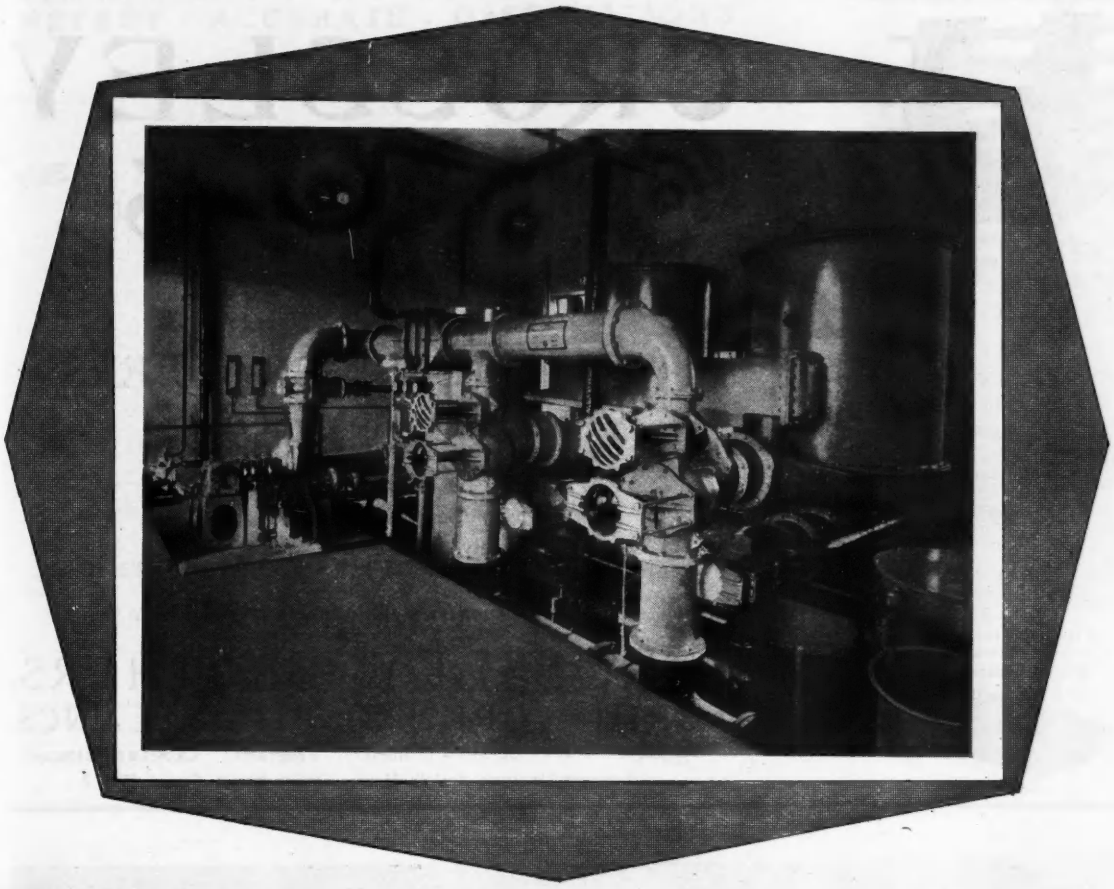

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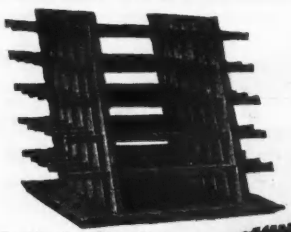

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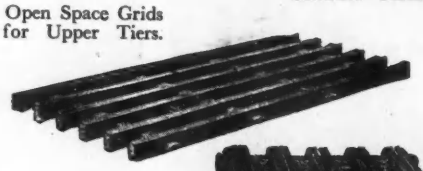

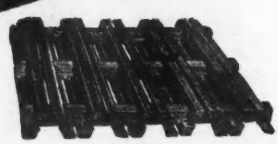

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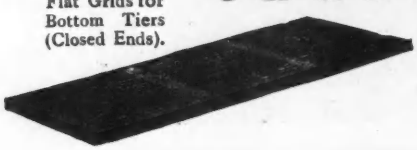

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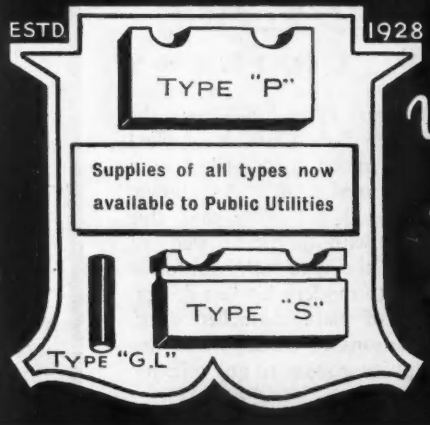

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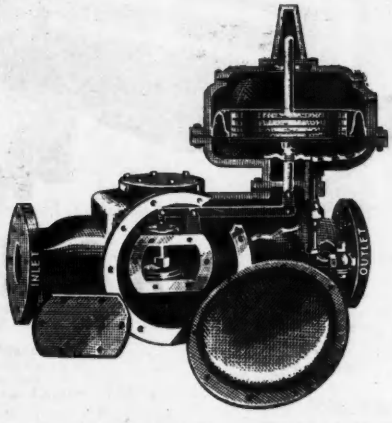

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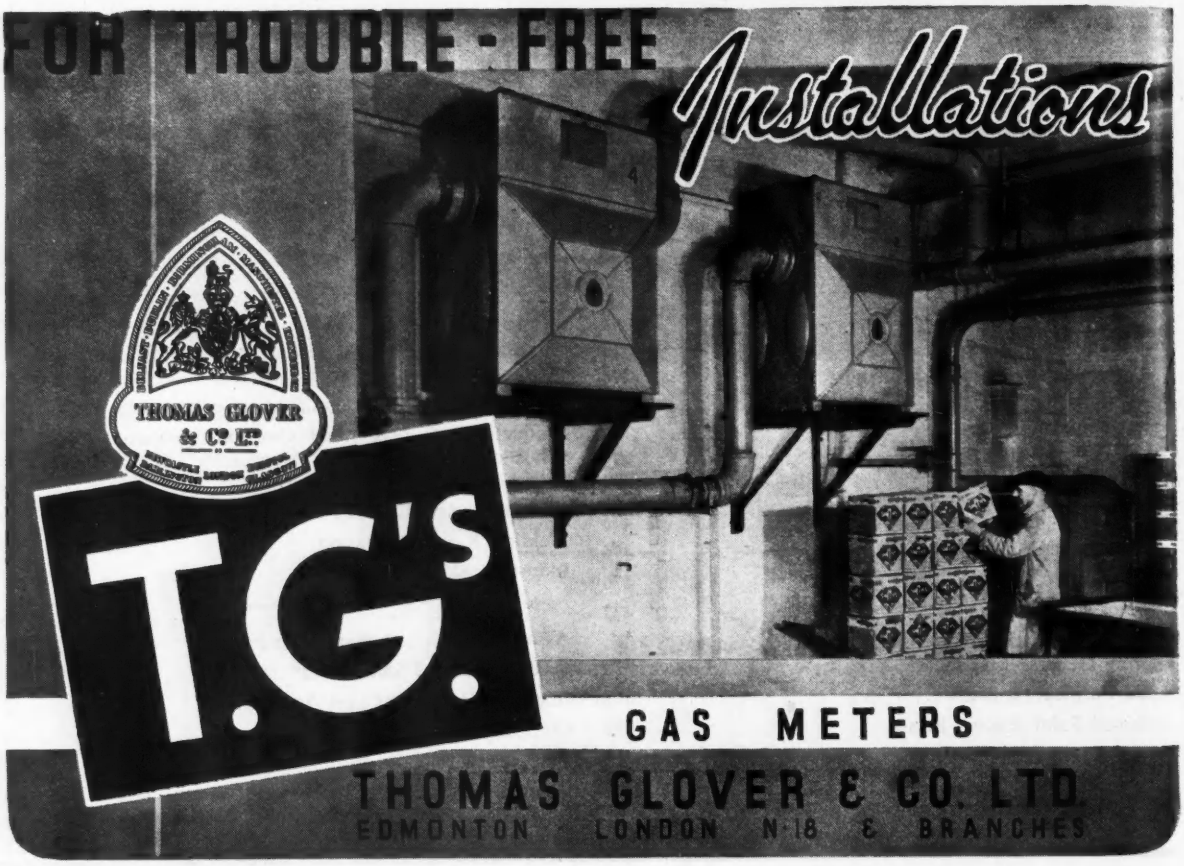

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GAS JOURNAL

Vol. 254 June 2, 1948 No. 4435

A HOME FOR THE INSTITUTION

FOR a quarter of a century and more there has been at the back of the minds of those responsible for the conduct of the Institution of Gas Engineers, and of many ordinary members, the great desirability of the Institution having a headquarters of its own and appropriate to its status and its functions as the professional body of the British gas industry. Of late years both its status in relation to kindred engineering institutions, and its influence, have grown. The need has become more apparent that the Institution should have its own headquarters building in London as a meeting place for members, for the holding of Council and Committee meetings, and for the housing of its library and its administrative staff. With nationalization imminent this need is one of urgency. Moving from Grosvenor Gardens in 1936, where it shared a tenancy with other national bodies of the gas industry, it has since been housed in Gas Industry House, again sharing accommodation with other growing national bodies. The leasehold of Gas Industry House is held by the Gas Light and Coke Company. Under nationalization this lease will pass to the Gas Council, which will no doubt want to utilize the premises for its own purposes. It is clear that the time is ripe for the Institution, as an autonomous professional body, to acquire premises for itself ; and it is gratifying to learn that, in fact, steps have already been taken to this end—or perhaps we should say, to this new beginning.

In February of this year a resolution was passed at a meeting of the President, Vice-Presidents, and Past-Presidents of the Institution, the President, Chairman, and members of the Society of British Gas Industries, and representatives of gas undertakings that a separate headquarters of the Institution should be acquired as soon as possible. It was found that the minimum sum required for the purpose would be of the order of £100,000—one-half to be used at once for the purchase of a long lease and the renovation and equipment of the premises, and the remainder for the establishment of a sinking fund to enable the Institution in due course to renew the lease and so to continue for many years to come to maintain its own headquarters premises. How was the money to be raised? It was decided that an appeal should be launched covering three categories:—First, gas undertakings themselves ; secondly, member firms of the Society of British Gas Industries ; thirdly, all members of the Institution. For the first category it was necessary to seek authorization from the Minister of Fuel and Power. The Minister's blessing has now been given to the scheme, and gas undertakings will be asked to subscribe on the basis of up to 5s. per mill. cu.ft. of gas sold, whereby a total of £80,000 is confidently anticipated. As a matter of fact some 14 undertakings who have been approached on the matter have intimated that they will be prepared to subscribe a sum in total which, under deed of covenant, would amount to about £41,500 ; support to the extent of at least £20,000, is, it is expected, to be forthcoming from member firms of the Society of British Gas Industries. Promises from a few individual members of the Institution, again under deed of covenant, would yield about £4,000. It is hoped that the total donations from members will exceed £10,000. These figures have been given to us by Dr. Harold Hartley, who, throughout his year of office as President, has worked with great zeal and determination to make the scheme a resounding success. And we are confident that the appeal for funds will meet with spontaneous and generous response. The cause is impelling. More needful than ever before is it that the Institution of Gas Engineers should through its autonomy and its organization, and within its sphere, provide a hall mark of confidence and a platform for free discussion and the interchange and the stimulation of views.

FAIR PLAY

THE supply side of the gas industry, now faced with nationalization, could never have attained its present magnitude and efficiency without the co-operation and indeed the driving force of the manufacturers of plant and appliances, to whom from its earliest days the industry has looked—and never in vain—for progress in methods and improvements in design and performance. For 43 years the Society of British Gas Industries has been the medium through which the gas-works contractors and manufacturers have corporately promoted improvements in that side of the industry for which they have been primarily responsible, and to-day, when some of the organizations which have served the industry faithfully and well over varying periods of years are destined either to be completely wound up or to undergo fundamental change when nationalization takes effect, the S.B.G.I. as a floating self-propelled entity in the sea of nationalization, looks to the future with confidence.

The Council's annual report, to which we refer in other pages, makes no attempt to conceal the fact that the problems that will arise on the nationalization of gas supply are matters of difficulty and uncertainty. Not the least of these is concerned with the powers which the Gas Bill proposes to give to the Gas Council to manufacture plant and fittings except for export. The Bill also gives powers to manufacture plant and fittings for themselves to the 12 Area Boards " after consultation with the Gas Council." It has already been pointed out that certain of the undertakings which are to be absorbed by the Area Boards have some such powers, and the issue of whether the Area Boards should have these powers was pressed unsuccessfully to a division in Committee by the Opposition. As stated in the Council's report, it was asserted in the Second Reading debate that if the manufacturers went on developing and giving the nationalized gas industry a fair deal, it seemed to the Government that they had nothing to fear from these powers. On the Society's side the Council has been at pains to impress on the Ministry its anxiety that if there is to be competition with a nationalized industry it should be on a basis of fair trading and fair costing, and that there should be reasonable safeguards for the interests of the Society's members.

Customers with whom over generations the contractors and manufacturers have a record of amicable working will become their potential competitors. As the Council now sees the position there exists an honoured tradition of co-operation within the gas industry working at all levels which has stood the test of time and experience without sustained challenge, and in an atmosphere of mutual confidence the Society's members have brought to the service of the public through the gas supply industry a fund of knowledge and experience which has been gained in this and other industries. Within the comparatively short life of the S.B.G.I., composed as it is in large measure of firms whose founders and their successors laid and built a practical service long before the formation of the Society was conceived, there has been undisputed evidence of a desire to render the industry a fair deal. What the members now rightly ask is that they may be assured of a fair field both in trading and in costing. Their own records show that, given reasonable freedom from restrictions and controls—some of which seem to us to be inexplicable ; the incidence of the purchase tax is a case in point—they are quite capable of meeting not only the current demands of an industry which is admittedly ready for expansion, but the much greater needs of a nationalized industry, if nationalization is carried out with adequate regard to the industry's potentialities as an economic supplier of smokeless fuels and as a source of chemicals. But there is a proviso. Any attempt on the part of any of the Area Boards to manufacture its own equipment must be governed by strictly fair trading and fair costing. Surely this is not too much to ask and, indeed, expect.

The rest of the report shows that the Society has continued to co-operate effectively with the Institution of Gas Engineers and the Gas Research Board ; that its members, through no fault of their own, have not in the main fulfilled their hopes of catching up on the lack of production for the home market during the war years ; and that exports are being developed so far as allocations of raw materials will permit.

THE NORWICH MEETING

IN these columns last week we pointed to the serious position occasioned by the shortage of silica refractories as affecting the building of new gas-making and coke-producing plant, with its obvious impact on steel production. It is the time-worn question of the vicious circle. A few days previously the Eastern Association of Gas Engineers and Managers were meeting at Norwich, and our report of this meeting also appeared in our pages last week. It was singularly opportune that the speaker to address the conference should be our old friend Mr. A. T. Green. Mr. Green, who spoke without notes, was at the top of his form, which is saying a great deal, and he made his points with characteristic emphasis spiced with good humour. Silica refractories are in short supply ; they have a very small safety factor in use. "The sooner it is realized," said Mr. Green, "that factor of safety of silica bricks—which constitute the key to carbonizing—is negligible, the sooner it will be appreciated how carefully, how delicately, they must be used. . . . We shall be tight for refractories for some considerable time ; we must make the very most of existing plant." And he proceeded to outline some of the problems of silica in use and how to deal with them, stressing that there was room in the gas industry for more experts on refractory materials. We share his view that there could to advantage be closer working contact between the staff of the Refractories Research Association and those who are operating refactory materials in the field.

The whole proceedings of the Eastern Association's Norwich conference under the Presidency of Mr. Ronald A. Weston went through with a smoothness resulting from careful organization and thought for detail ; pervading all was the spirit of friendliness ; and Mr. Weston—and, we would add, Mrs. Weston—must have the pleasantest memories of a happy and a successful occasion. The President of the Institution of Gas Engineers, Dr. Harold Hartley, was present throughout the meeting, as also was Colonel H. S. Smith, Deputy-Chairman designate of the Gas Council. Among the questions touched upon was the suggestion that the various District Gas Associations throughout the country should be more closely linked with the Institution and might well become District Sections of the Institution itself. The whole matter is to be discussed in London at next week's Institution meeting, for which the stage is now set.

ELECTRICITY FAILURE

The gas industry has reason to follow with interest the ebb and flow of electricity current, its elder brother as far as nationalization is concerned. The facts of last week's happenings are generally known: On Sunday, May 23, London and South-East England suffered two electricity breakdowns. At a speedily convened Press conference on the following Monday, Lord Citrine, Chairman of the British Electricity Authority, gave explanation of this sudden occurrence as best he could. There had been an unexpected drop of 10 degrees in temperature for which the undertaking, calculating its load on weather forecasts, had not been prepared. Mr. J. Hacking, Deputy Chairman, added that there was a general shortage of plant, and some of it was under repair, thus overburdening the rest. A line which had been under maintenance and was thought to be in working order failed immediately on being switched in. Lord Citrine's parting words to reporters were: "Don't get into a panic. The country is not going to perish because we haven't enough equipment. But the position is bad." If any pessimist asked, "What next ?" he received his implied answer the following day when electricity supplies failed in parts of Derbyshire and Norfolk, and industry lost many hours of work. In brief, something went wrong.

Questions have been asked in Parliament, and there is yet doubt whether this is a "fairly small matter of day-to-day management" which should be dealt with in the Commons. The general feeling is that what was formerly a local matter is now nation-wide concern, and the Speaker, after one refusal, agreed that a further statement should be made. This gives rise to reflection. Since everyone knows that there is a shortage of plant, we are prepared for similar breakdowns, precedent having been established. The gas industry, too, is aware that breakdowns at gas-works are not beyond possibility in the absence of assured supplies of raw materials (refractories, and coal of the right quality) and of labour. We would say, however, that the measure of public confidence in gas supply—and this has nothing whatever to do with nationalization—was never higher. There are fundamental economic, practical, and scientific reasons for this.

RECONSTRUCTION AT BRISTOL

On a later page we outline a major scheme of development which is to be carried out at the Stapleton Road Works of the Bristol Gas Company—a scheme which has engaged the attention of Mr. James Carr, M.B.E., since his appointment as Engineer and General Manager to the Company at the end of 1945. Geographically Bristol is well situated to receive coal by rail and by sea; as a corollary, the question of coke export can be well accommodated. It will be noted that mechanical producers are to be installed—this after an extensive examination by Mr. Carr of mechanical producers on the Continent and in operation in South Wales. He is convinced that for plant of the capacity stated this type of producer was essential for uniform rate of gasification and the absence of heavy manual work. The final decision as to the purification plant has not been reached, the possibilities of liquid purification plant being uppermost in Mr. Carr's mind.

THE CHEMICAL INDUSTRY IN SCOTLAND

In May, 1945, the Scottish Council on Industry appointed a Committee on the Chemical Industries of Scotland. This Committee, which in the first instance was under the chairmanship of Sir Steven Bilsland, and later of Professor W. M. Cummings, has now made its report. Among its findings is that a chemical research committee should be formed, with representatives from industry, academic institutions, and existing research associations, to consider chemical research and development to meet Scottish needs. Another recommendation is that the potentialities of such processes as the Robinson-Bindley and the Fischer-Tropsch should be further explored with the utmost vigour, and it is hoped that the newly formed Coal Tar Research Association will find a place within its organization for a section operating in Scotland. "Most probable prospects for increased

demand in the tar industry," it is stated, "lie in the development of plastics." Hitherto silica bricks have been made only in limited quantities in Scotland; a considerable increase in output is expected when supplies of labour become available. Again, the possibility of using oxygen in the fuel industry should be explored. The report is obtainable from the Secretary of the Scottish Council, 20, George Street, Edinburgh, 2.

Personal

Mr. ROBERT M'FIE, interim Manager at Rothesay, has been appointed Manager of the Burgh's gas undertaking.

* * *

Mr. H. F. SAVAGE, Traffic Manager, Gas Light and Coke Company, Beckton, has been appointed a Justice of the Peace for the County of Essex.

* * *

Mr. W. R. EDGAR, Managing Director of Wm. Edgar & Son, Ltd., of Hammersmith, has been appointed Official Timekeeper at the Olympic Games (Swimming Section) at Wembley, from July 29 to Aug. 14 next.

* * *

Mr. REGINALD BOORN, who has been associated with the gas industry for 22 years, and latterly has been active on the sales side of Cowper Penfold & Co., Ltd., has been appointed Sales Manager of that Company as from June 1.

* * *

Mr. V. J. E. CROWLEY, of George Hands & Co., Ltd., of Farringdon Road, London, whose recovery from two serious operations in the Royal Masonic Hospital was reported in the "JOURNAL" of April 28, hopes to resume at any rate a part of his activities next week when he plans to call on some of his friends in the industry.

* * *

A testimonial dinner and presentation was given by the Parkinson Stove Co., Ltd., on May 20 to Mr. T. S. JORDAN in celebration of his 50 years' service with the Company. Mr. Jordan has spent all his working life in the gas industry, having started his career at the meter works of W. & B. Cowan, Ltd., and risen to the post of Sales Superintendent at Stechford. The dinner, held at the works canteen, was presided over by Mr. W. Lawson Hurdman, and a presentation to Mr. Jordan was made by Mr. R. J. Rogers. Other tributes were paid by Mr. J. W. Broad and Mr. J. A. Ednow.

* * *

Mr. HENRY E. DALTON, who has been elected Chairman of Directors of the Stamford Gas Company, is the fourth member of his family to hold that office, while his uncle, Mr. E. Sisson Dalton, who has been invited to join the Board, will be the sixth member of the family to serve the Company as a Director. The new Chairman's grandfather, Mr. Henry Dalton, a Director from 1889 to 1908, was the first member of the family to become a Director and also to occupy the chair, and his brother Robert was a Director from 1901 to 1911. The next member of the family to join the Board was Henry's son, Edward, who was a Director from 1915 to 1939 and Chairman from 1934 to 1939. He was followed by his brother, Charles, Director from 1922 to 1946 and Chairman from 1939 to 1946, and his son, the present Chairman, who joined the Board in 1940. Mr. P. K. BANKS has been elected Vice-Chairman.

* * *

MR. ROBERT GORDON, shift foreman at Inchgreen Works of the Greenock Gas Department, was presented with a wallet of notes on May 21, to mark his retirement after 26½ years' service with the Corporation Gas Department. When making the presentation on behalf of the employees and staff, Mr. Ronald Keillor referred to Mr. Gordon as having been the first foreman trained at Inchgreen who had not originally been associated with the old horizontal retort method of gas making; only about a dozen employees remained who would remember the older school of foremen. Mr. Keillor also stated that since Mr. Gordon entered the Department the make of gas had been almost doubled and it was largely due to the conscientious work of the shift foreman that a steady supply of gas at all hours of the day and night was maintained to the people of Greenock over this long period. Other speakers joined with Mr. Keillor in wishing Mr. Gordon many happy years of retirement.

Obituary

The death occurred on May 23 of Mr. F. W. TAYLOR, Engineer and Manager of the Ryde Gas Light Company. Before joining the Company in 1919, Mr. Taylor was Engineer, Manager, and Secretary at Harpenden. He had been a member of the Institution of Gas Engineers for 40 years. Mr. Taylor, who was 64 years of age, leaves a widow, a daughter, and two sons.

* * *

The death is reported of Mr. JAMES BELL, formerly Gas Manager at Dumbarton. Before going to Dumbarton he was with the Edinburgh Corporation Gas Department and Gas Manager at Kirkintilloch. He was a Past President of the Waverley Association of Gas Managers and of the North British Association of Gas Managers, and was also a member of the Scottish Fuel Efficiency Committee.

* * *

The death occurred on May 26 of Mr. JOHN E. HALL, aged 82, for 39 years Engineer, Manager and Secretary of the Prescot and District Gas Company prior to his retirement in 1936. Born at St. Helens, Mr. Hall was the son of Mr. Joseph Hall, then Manager of the old St. Helens Gas Company. Educated at Owens College, Manchester, he served his articles with Ashmore, Benson, Pease & Co., Ltd., Stockton-on-Tees. After being successively Assistant to the Wigan and Southport Gas Departments he was for a time outside representative of the Gas Light Improvement Company, and was appointed Engineer, Manager, and Secretary of the Prescot and District Gas Company in 1897. He was elected a member of the Prescot Board in 1931, and on the Company's acquisition by the United Kingdom Gas Corporation he was elected a Director of the Runcorn and District Gas Company. He retained both Directorates up to the time of his death. He is survived by a daughter and three sons, the eldest of whom succeeded him at Prescot in 1936.

* * *

Sir W. MURRAY MORRISON, whose death at the age of 74 occurred in London on May 21, was a pioneer of the aluminium industry in Great Britain. It was largely owing to his optimism, ability, and clear judgment that aluminium, in his time, ceased to be a rarity and became one of the world's leading metals and a commodity entering every sphere of life. He had been associated with the British Aluminium Co., Ltd., since 1895. The parent Company has to-day over 20 subsidiary and associated companies, in addition to selling agencies all over the world. With this growth of the industry, Sir Murray became well-known internationally and acquired a considerable reputation for his great knowledge both as technician and as business man. He was knighted in 1943 for his services to the country, and was made a Commander of the Order of St. Olav of Norway in 1933. He was a Member of the Institution of Civil Engineers, a Member (and past member of Council) of the Institution of Electrical Engineers, a Fellow of the Institute of Physics, a past member of Council and Vice-President of the Faraday Society and of the Institute of Metals (whose Fellowship and Platinum Medal were awarded to him in 1942), and a Vice-Chairman of the British Non-Ferrous Metals Research Association.

Diary

June 3.—**Solid Smokeless Fuels Federation**: Executive Committee, 11.30 a.m., The Dorchester, Park Lane, W.1.

June 3 and 4.—**British Gas Council (Domestic Development Committee)**: Home Service Advisers' Conference, Gas Industry House. (For full programme see "JOURNAL" of May 26, page 424.)

June 4.—**North of England Gas Managers' Association (Auxiliary Section)**: Annual Meeting, Redheugh Works, Newcastle-upon-Tyne and Gateshead Gas Company, 2.15 p.m.

June 5.—**Scottish (Eastern) Junior Gas Association**: Annual General Meeting, Edinburgh.

June 8.—**Gas Engineers' National Guild**: Annual General Meeting, Friends House, London, 5 p.m.

June 8-11.—**Institution of Gas Engineers**: 85th Annual General Meeting. Friends House, Euston Road, London, N.W.1.

June 9.—**Women's Gas Council**: Annual General Meeting, Central Hall, Westminster, 3 p.m.

June 9.—**National Benzole Association**: Annual General Meeting, Wellington House, Buckingham Gate, S.W.1, 3.30 p.m.

June 17.—**Lancashire and District Coke Association**: Annual General Meeting, Grand Hotel, Aytoun Street, Manchester, 11.30 a.m.

June 18.—**London and Southern Junior Gas Association**: Annual General Meeting. Presidential Address, C. A. Deas. Gas Industry House, 7 p.m.

June 19.—**Scottish (Eastern) Junior Gas Association**: Annual Outing, Fife.

June 19.—**Manchester District Junior Association of Gas Engineers**: Ladies' Day, Blackpool.

June 19.—**London and Southern Junior Gas Association**: Ladies' Day. Visit to Hatfield House as guests of the Tottenham and District Gas Company, preceded by lunch at the Cherry Tree Inn, Welwyn Garden City.

June 23.—**Western Junior Gas Association**: Summer Meeting and Ladies' Day. Visit to the Letchworth Factory of Messrs. Ewart & Sons, Ltd.

July 2.—**Waverley Association of Gas Managers**: Annual Meeting, Y.M.C.A. Hall, Edinburgh.

Letters to the Editor

British Gas Staff Association

DEAR SIR,—With reference to the Annual Conference of the British Gas Staff Association held on May 22, the following statement attributed to its Chairman, Mr. W. E. Webb, J.P., was published in your issue of May 26: " Mr. H. J. Arnold had succeeded in bringing in the remaining great London undertaking (the South Metropolitan Gas Company) which had persistently stood out."

This unqualified statement, conveying as it did a wrong impression, has caused several enquiries to be made as to whether officers of the undertaking mentioned are, in fact, now members of the B.G.S.A. They are not. The fact is that Groups, under B.G.S.A. auspices, have been formed in relation to certain members of this Company's weekly staff, foremen, and slot meter collectors; *but not for the official salaried staff.* Ninety-six per cent. of the personnel of the last-named staff are members of the Company's Salaried Staff Association. If any of these officers are also members of the B.G.S.A., I am not aware of it.

Perhaps it should be emphasized that members of our salaried staff do not consider that they have " persistently stood out " from B.G.S.A. membership, any more than from NALGO, or any other like Association. In any case, there is no prescriptive right in these matters, and we shall continue to make our own decisions in our own way. Meanwhile, it would be appreciated if the B.G.S.A., when reporting on this matter, will kindly define the position clearly.

Yours faithfully,
V. HEWES,
Chairman of the Salaried Staff Association
of the South Metropolitan Gas Company.

709, Old Kent Road,
London, S.E.15.
May 28, 1948.

The Gas Industry and Nationalization

DEAR SIR,—In your report of the discussion on the address given by Mr. R. D. Keillor on " Gas Industry Administration and Nationalization " to the North of England Association—" GAS JOURNAL " of May 12—I am quoted as saying that " I anticipated the appointment of a multitude of officials to the industry after nationalization." I sincerely hope that neither I, nor anyone else, need anticipate anything of the sort.

What I did say in commenting on the probable administrative organization as depicted by Mr. Keillor in Diagram 3 of his paper was that " the set up envisaged by Mr. Keillor seemed a fair assumption but the tendency in already nationalized industries was to create a large number of officials between Area, sub-area and undertaking levels, and it was to be hoped that the gas industry would profit by the experience of others and so avoid imposing a tremendous administrative superstructure. If one regards the gas industry as a tree with the unit undertakings as the roots, it is obvious that it is from these roots that the nourishment is derived, and it would be economically unsound to overload the roots in the early stages of nationalization until they had been developed and strengthened by gradual co-ordination in all respects."

I then cited the holding companies as examples of co-ordinated administration which did not entail large headquarters staffs and operate profitable and efficiently by maintaining the autonomy of their constituent undertakings although working within the lines of the policy adopted by their Group.

Yours faithfully,
A. G. I. ANDERSON,
Engineer and General Manager.

Bognor and District Gas and Electricity Company,
Bognor Regis. May 17, 1948.

News in Brief

A Modern Homes Exhibition, organized by the Glasgow Corporation, will be held in the Kelvin Hall, Glasgow, from Oct. 6-30. Displays of gas heating and lighting and cookery equipment will be included in the show as in previous years. The first post-war Modern Homes Exhibition was held last year, when 250,000 visitors were attracted.

The New Battery of Coke Ovens built by the Consett Iron Co., Ltd., at the Fell Works, Co. Durham, have produced their first coke. The plant will make 8,000 tons of coke a week and in addition 120,000,000 cu.ft. of gas will be available for use at the steel works. The new battery is part of a £3,000,000 modernization plan being carried out by the Company.

Of the Numerous Volunteer Camps established by Agricultural Executive Committees throughout the country to help farmers with this year's harvest there are probably few fortunate enough to enjoy the advantages of gas cooking. One of these, however, is that recently opened by the Hants A.E.C. at Holybourne, near Alton. Here a range of four Flavel enamelled cookers supplied by the Farnham Gas and Electricity Company will cater for upwards of 60 volunteers a week at the height of the season. All the huts at this camp are also lighted by gas.

Approval in Principle of expansion plans at Wishaw has been given by the Ministry of Fuel and Power. These involve the erection of a new purification plant capable of handling 4 mill. cu.ft. of gas per day, at a cost of £150,000. Reporting on this position at the last Town Council meeting, the Gas Committee stated that the Gas Manager had given this report to the Ministry and had received approval for the installation, subject to due consideration and later conditions. No precise date or details have yet been approved and the scheme will await the nationalization of the industry.

At a Meeting of the Fuel Luncheon Club in London recently, the President, Mr. F. M. Birks, C.B.E., expressed on behalf the Club heartiest congratulations to Mr. A. E. Sylvester, who was with them, on his appointment as Chairman-designate of the Gas Council. " The nationalized gas industry," said Mr. Birks, " will be very fortunate in being led by one who, apart from his skill in administration, personally knows intimately all the ramifications of its many activities. We know you will have every success and that the gas industry under your guidance will expand and adjust itself efficiency to meet any requirements of the future." In reply, Mr. Sylvester said it was a matter of surprise and joy to him that, after being told by his doctor 18 months ago that he must stop working, his health now had recovered, and he was able to take on the post of Chairman-designate of the Gas Council. His philosophy was to distinguish between the permanent and the transient. Governments come and go, but the gas industry must be kept going. With all the support that he was receiving, he was confident that the industry would be successful.

The Tender of the Power-Gas Corporation, Ltd., Stockton-on-Tees, has been accepted by the Dunfermline Council for the installation of a carburetted water gas plant at the Dunfermline gas-works. Authority has also been given to the Manager to purchase a centrifugal pump as a safeguard against flooding at the works. A section of the coke grader is to be altered by the provision of a vibrating screen.

A Considerable Saving in Costs is anticipated from the installation of gas heating at the Cambuslang factory of Hoover, Ltd. One of the process units comprises the continuous impregnating and baking of windings for fractional horse-power motors. The Zanderall process is said to be the only one of its kind in operation in Europe. The heating is at present carried out by electricity, and it is here that the introduction of gas heating is expected to show a substantial economy.

Colvilles, Ltd., are planning large extensions to several of their works. Permission has been received for the building of new coke ovens at Clyde Iron Works while additional melting plant at Clydebridge and extensive additions to the plant at Dalzell and Lanarkshire works are also planned. Referring to these plans when he submitted the 1947 report, Sir John Craig, Chairman, indicated that if these plans develop along the lines proposed it will involve large capital expenditure and the Directors are now giving careful consideration to the financial aspect. He said that the Board was determined that the steel production of Scotland would be efficiently and adequately developed to meet all the varied demands.

Members of the Southend Branch of the Women's Gas Council had their own " Woman's Hour " on May 4 when Mr. Leslie Hardern, Public Relations Officer to the Gas Light & Coke Company, spoke to them in the Haig Hall on " Design." After a glance back to the past which revealed the factors which have led to deterioration in design of objects of everyday use since the coming of the Industrial Revolution, Mr. Leslie Hardern made clear how the housewife to-day can do a service to herself and the nation by cultivating a critical and at the same time constructive eye for the things she uses. He further gave it as his opinion that if women made their wants known, manufacturers would be more willing to listen to them than they have ever been. To be of use, however, a woman's views need to be put forward not singly but as part of a stream of opinion. To create such a stream women should work in groups and here the Women's Gas Council had an important part to play. If it formed a group to study design of everyday articles and sent up suggestions to a central design committee at headquarters, who would sift them and pass them on to manufacturers, they would be taking the first steps along the right road. The meeting expressed its hearty appreciation of Mr. Hardern's visit and at the end of the afternoon the first members of the new Design Study Group were enrolled.

Scunthorpe Town Council has accepted the tender of Newton, Chambers & Co., Ltd., of Sheffield, for the installation of a new gas-holder of 1,000,000 cu.ft. capacity at a cost of £60,000.

The **Coal Industry Society** at its annual meeting on May 25, elected as Chairman Lord Hyndley, Chairman of the National Coal Board. The Society pursues educational activities, and successful candidates in the examinations following last winter's courses of lectures on domestic and industrial fuel were presented with prizes. Courses to be arranged for next winter will include visits to a colliery, a gas-works, and the Fuel Research Station at Greenwich.

The Report for 1947 of the Institute of Physics shows that membership continues to grow at a little over 10% per annum, and is now about 3,250. The Institute has seven branches at home and oversea, and six subject groups, the Stress Analysis Group having been created in 1947. The new President of the Institute is Dr. F. C. Toy, Director of Research, British Cotton Industry Research Association, the new Vice-President Dr. T. E. Allibone. Mr. E. R. Daview and Dr. B. P. Dudding continue as Hon. Treasurer and Hon. Secretary.

Mr. W. J. Terry (Chairman and Managing Director of The London Electric Wire Co. & Smiths, Ltd.) was the principal guest at a Purchasing Officers' Association luncheon at the Connaught Rooms, on May 11, in connexion with the B.I.F. Referring to the purchasing officer as a key man in industry, Mr. Terry considered that his principal qualifications should be integrity, personality, tact, technical knowledge, and financial understanding. Mr. Terry mentioned his own experience in the purchasing profession, and said that it had given him a full understanding of the trade of this country. Particularly in these days of sellers' markets, he thought a purchasing officer should take every opportunity of meeting his suppliers, and discussing his requirements with them.

Seven Hundred Members and Friends of the Birmingham Branch of the Women's Gas Council heard an address by Mr. R. J. Gregg, Sales Manager of Ascot Gas Water Heaters, Ltd., entitled "Bouquet for Housewives" at the Carrs Lane Meeting House, Birmingham. The meeting was held in two stages on successive days (May 11 and 12), and included the showing of the Ascot film "Happy in the Morning" and distribution of a special brochure "Hot Water Highlights."

While Showrooms were under discussion, with special reference to exhibiting the new coal burning appliances, at the Annual Conference of the National Federation of Ironmongers, Mr. P. G. Rodger, the York representative, drew attention to the fact that the Coal Utilization Joint Council had established showrooms at Glasgow, and intended to open similar showrooms in Oxford Street, London, where solid fuel, gas, and electrical appliances would be on view. The Conference was held at Eastbourne from May 24 to 26.

Dunfermline Town Council is making representations to the Ministry of Fuel with regard to the proposed Gas Order (1948) to be promoted by the Kirkcaldy Town Council. The purpose of the Order is to give Kirkcaldy Town Council powers to acquire 30 acres of land at Sheddoway Farm, near Thornton, on which to erect new works. Dunfermline Council feels that it has an interest in the project, both as gas authority in Dunfermline and as representing the interests of the consumers of gas in the burgh. The new gas-works would be situated within 12 miles of Dunfermline. The draft Order makes no provision for enlarging the existing Kirkcaldy area of supply. It is understood that Buckhaven, Methil and Leven Town Councils are adopting similar measures. Fife County Council has intimated its opposition to the proposed scheme on the grounds of amenity.

THE NORWICH MEETING

The Spring Meeting of the Eastern Association of Gas Engineers and Managers was preceded by a reception, on May 19, at the Samson and Hercules House, Norwich, at the invitation of the Chairman and Directors of the British Gas Light Company, Ltd. The guests were received by the Deputy Chairman and Managing Director, Mr. H. G. Palmer, and Mrs. Palmer, and the President of the Association, Mr. R. A. Weston and Mrs. Weston. Left to right: Mrs. Weston, Mr. Weston, Mrs. H. C. Smith, Mrs. Palmer, Colonel H. C. Smith, Deputy Chairman Designate, Gas Council, and Mr. Palmer.

At the opening of the business session at the Conference at Norwich of the Eastern Association of Gas Engineers and Managers, on May 20, under the Presidency of Mr. R. A. Weston, Engineer and Manager of the Norwich Station of the British Gas Light Company, Ltd. The meeting was held in the Stuart Hall.

SOUTHERN ASSOCIATION OF GAS ENGINEERS AND MANAGERS

SPRING GENERAL MEETING

THE Spring General Meeting of the Southern Association of Gas Engineers and Managers was held at the Connaught Rooms, London, on May 25 under the Presidency of Mr. H. J. Escreet. While there was a large attendance it was reported that 78 apologies for absence had been received, including a telegram from Dr. Harold Hartley, President of the Institution of Gas Engineers, expressing his good wishes for a successful meeting.

Mr. **J. M. Webber,** Hon. Secretary and Treasurer, reported with sorrow the deaths of Mr. E. R. Willis (Gas Light and Coke Company), Mr. D. E. Garlick (Glastonbury), and Mr. E. S. Stredwick (South Metropolitan Gas Company), and the members expressed their sympathy with a silent vote.

Election of Officers

The **President** proposed the election of Mr. L. P. Ingram (Taunton), at present Senior Vice-President, as President of the Association for the year 1948-49. Members of the Western District and those who had been privileged to visit it during Mr. Ingram's term of office as Chairman of the District had had a foretaste of what they might expect during the coming year.

Mr. **R. C. Taylor** (Torquay), in seconding the proposition, said Mr. Ingram and himself had worked in close proximity for something like 35 years, and the friendship formed in earlier days had been continued throughout.

Mr. **Ingram,** returning thanks, said he realized that he would be following an illustrious line of Presidents, and with the help and guidance of his immediate predecessor and the efficient control of the Hon. Secretary he would do his best to live up to the high traditions of the Association.

Mr. **Ingram** proceeded to propose the election of Mr. J. H. Dyde as Senior Vice-President. Thirty years ago, he said, Mr. Dyde followed him at Leeds University, and Professor Cobb gained an outstanding undergraduate. Two years later he followed him at Plymouth and Stonehouse, and in 12 months' time history would repeat itself when, in the normal course, Mr. Dyde would follow him into the Presidency.

Dr. **S. Pexton** seconded, and remarked that his only criticism of the appointment was that there seemed to be too many Yorkshiremen in London.

Mr. **Dyde** briefly returned thanks and promised to do his best to serve the Association.

Colonel **J. A. Gould** (South Suburban Gas Company) proposed the election of Mr. T. C. Battersby (Watford and St. Albans) as Junior Vice-President. He had, he said, been a member for 20 years and had very wide experience in the gas industry.

Mr. **H. V. Pye** seconded. Alluding to the fact that a few days earlier Mr. Battersby had been elected Vice-President of the Eastern Association of Gas Engineers and Managers, he remarked that by the time he reached the chair of the Southern Association he would have been President elsewhere, and he was sure they would not be disappointed.

Mr. **Battersby** replied that it would be his privilege to serve the Association in all that it undertook.

Mr. **D. C. Cross** proposed and Mr. **J. H. Bateman** seconded the re-election of Mr. C. F. Botley and Mr. J. H. Donaldson as Auditors, and on the proposition of the **President,** seconded by Mr. **Ingram,** Mr. J. M. Webber was enthusiastically re-elected Hon. Secretary and Treasurer. Mr. F. Dawson, Mr. Ingram, and Mr. Dyde were appointed as representatives on the Managing Council of the Gas Engineers' National Guild.

The names of the personnel of the Eastern and Western District Committees and of the new District Representatives on the Council to the Association were formally reported and approved.

Honorary Membership

Mr. **W. A. Barnett** proposed that the distinction of Honorary Membership should be conferred on Mr. Henry Woodall, M.I.C.E., who had been a member since 1901. The services which Mr. Woodall had rendered to the Association and to the industry in general were too well known to need emphasis, and he counted it an honour and privilege to move the resolution.

Mr. **J. W. Townsend** seconded, and the resolution was carried with acclamation.

Mr. S. E. Knowles (Eastbourne) whose resignation was accepted at the Annual General Meeting last October, was re-admitted as a member of the Association on a retired basis, and the meeting confirmed the election of the following new members, who had already been approved by the Council:

Associate Membership: L. T. Minchin (Consultant).

Full Membership: T. Bispham (Gas Light and Coke Company, Kensal Green); C. C. Cunnold (Gas Light and Coke Company, Bow Common); L. F. Garner (Tottenham and District Gas Company, Southgate Works); W. T. Houston (Wandsworth); S. Muller (Gas Light and Coke Company, Southall); C. Pearson (Gas Light and Coke Company, Heston); R. G. T. Powell (Burgess Hill and St. John's Common Gas Company); C. Stott (South Metropolitan Gas Company, East Greenwich Works); T. L. Tallentire (Falmouth); H. Wadsworth (Tottenham and District Gas Company); T. J. Greenwood (Bodmin Gas Consumers Company); W. K. Hutchison (Managing Director, Gas Light and Coke Company).

The **President** then called upon Dr. S. Pexton, Mr. G. Dougill, and Mr. L. A. Ravald (Gas Light and Coke Company) to present a paper on "The Removal of Tar, Naphthalene, and Ammonia from Gas." (The paper will be published in a later issue of the "JOURNAL.")

LIQUID PURIFICATION PLANT

Messrs. R. & J. Dempster, Ltd., of Manchester, have in course of manufacture a liquid purification plant on the "Manchester" principle for the Birchenwood Coal and Coke Co., Ltd., Kidsgrove, near Stoke-on-Trent. The Company supplies purified gas in bulk to the Stoke Corporation, the Newcastle-under-Lyme Corporation, and the Kidsgrove Gaslight Company.

This order is the result of extensive experimental work carried out by Messrs. R. & J. Dempster, Ltd., in conjunction with R. Walker, C. R. Wilkin, and J. T. Brown, who are patentees, on the pilot plant erected by Messrs. R. & J. Dempster, Ltd., at the Rochdale Road Works of the Manchester Corporation.

Several modifications resulting from experience gained in these experiments are being incorporated in the Birchenwood plant which will also, it is hoped, provide further experimental data and development information.

The plant will be supplied with 3 million cu.ft. of coke oven gas per day and will considerably relieve the load on the existing dry box installation in addition to producing a residual sulphur suitable for the manufacture of sulphuric acid.

COMBINED PAINT EXPORT EFFORT

An important plan to increase British paint exports was inaugurated in London at the annual luncheon of the Paint Manufacturers and Allied Trades Association on May 20. It was announced that 150 members of the Association with factories in all parts of Great Britain were putting into operation a plan under which they are to manufacture high quality paints for the export market, using common formulae, standard colours and packing and selling through a new co-operative marketing organization, Associated British Paints, set up by the Association. The plan has the support of the Board of Trade, which has allocated special supplies of raw materials.

Sir Patrick J. Hannon, M.P., speaking as President of the National Union of Manufacturers, said that the organization had watched with great interest the growth of one of its youngest and most virile affiliated trade bodies. He recalled that the Association came into existence in 1941 to fight a threat of concentration of the medium and smaller firms in the industry. They won that fight and made political history in the process for the decision for concentration had already been made and was revoked through the efforts of the Association. The Association had secured another great victory by successfully launching its new venture. This old country sadly needed to-day men of the vision, courage, and pertinacity which members of that Association had shown.

Mr. R. B. Jackson, President of the Association, said that in the interests of efficient production, participating firms were divided into various categories so that certain manufacturers would make one quality or one colour for the whole of the group. Such a scheme under which firms would be prepared to sink their individuality was not easy to arrange. It meant many months of visitations to branches and firms all over the country, but the response and agreement had been amazing. A Technical Committee had been set up to decide and allocate formulae and colours for paints, distempers, and varnishes and a Costing Committee had been appointed to guide the Sales Committee on prices. The Sales Committee also had the task of appointing agents and distributors abroad and, with the Publicity Committee, to design attractive labels for containers, colour charts and sales literature with special appeal to overseas markets in various parts of the world.

STUDENTS ENTERTAIN TUTORS

INTENSIVE COURSE COMPLETED

At the conclusion of the Intensive Course in Gas Engineering (Manufacture) held at Cambridge under the Government's Further Education and Training Scheme in conjunction with the Institution of Gas Engineers and the Cambridgeshire Technical College and School of Art, an informal dinner was arranged by the students to which all the tutors were invited.

Mr. V. A. Bignell (West's Gas Improvement Company) in expressing the students' gratitude to Mr. J. Hunter Rioch, (Managing Director, Cambridge University and Town Gas Light Company) for the arrangements made said how fortunate they had been in having as their tutors in the main subject, four Diplomes of the Institution namely, Mr. H. J. Patching of Peterborough, Mr. R. Whiting of Ipswich, and Mr. L. W. Jarrett and Mr. W. J. Spiller, both of Cambridge. They were very grateful to those tutors for their instruction which had entailed considerable responsibility and additional work for them. The regrettable lack of a suitable modern text book on Gas Engineering had made their work doubly difficult.

In spite of the lack of such a text book, the lectures had been first class and the Institution's syllabus had been adequately covered.

Without the facilities provided at the Newmarket Road works of the Cambridge Company for regular practical instruction and the arrangement for a series of valuable and instructive visits to works of other undertakings, the practical aspects of the work could not have been covered. Mr. Bignell thanked Mr. Winch, of the Cambridge Company, for his efforts in co-ordinating this, and the work of the visiting tutors.

The main part of the work had been concerned with the ancillary subjects which was the students' weakest field after their varying periods of absence on war service. It was particularly to the credit of the tutors that the course had covered, in the short period of seven months, not only the work necessary to fill in the gap between the Ordinary and Higher Grade Certificates, but also a considerable amount of necessary revision of earlier work. Mr. Purvis, as head of the Engineering Department of the Technical College, had himself set an admirable example of hard work and efficiency throughout the course, and the students were deeply appreciative of all that he and the staff had contributed.

Mr. D. C. Whitfield (United Kingdom Gas Corporation) supported Mr. Bignell's remarks, particularly with reference to the comprehensive notes provided by the tutors in the main subject which were invaluable in bridging the gap caused by the dearth of up-to-date technical reference books. He also referred to the value of concentrating on particular items of plant during the works visits so that they could be studied thoroughly rather than covering the whole of a works superficially in one visit.

Mr. B. Santo (Truro) said it was all very well to brush away the rust which had accumulated during the war years but it was rather a gamble as to what, if anything, would be found underneath. The task of the Technical College had been difficult considering the amount of work to be covered in such a short course. He knew their chemistry tutor had found great difficulty in obtaining adequate literature covering gas-works chemistry but the students considered he had met their needs very adequately and this was typical of the way in which the Technical College staff had gone out of their way to make the course a success.

Mr. E. H. Winch, Deputy Engineer and Manager of the Cambridge University and Town Gas Light Company, conveyed the good wishes, and apologized for the absence of Mr. Hunter Rioch, who was abroad, and who appreciated the students' gesture in arranging the dinner and in inviting him to attend. Mr. Winch thanking the speakers for their kind words, said he was sure that all the tutors felt that if they had contributed something to help in re-establishing a number of young men in their chosen careers who had been uprooted from their normal lives to serve their country, that alone would have been ample reward for the energy they had expanded in preparing the lectures. It was, therefore, more than gratifying to hear how much those present appreciated what had been done for them. For himself, he felt a certain amount of regret that the lecture notes were not going to be used more than once—it was disappointing that it had not proved possible to arrange a further course but perhaps the four main subject tutors might consider the possibility of combining to remedy the absence of text books to which attention had been drawn so forcibly.

He wished the students every success in the future and was sure the tutors would always follow their careers with interest. They would find wide scope for their abilities in the profession of gas engineering. He strongly recommended them to prepare themselves for responsibility and then to be willing to accept it when the opportunity came. There was a real need in the industry to-day for young men who were willing and able to accept responsibility.

In conclusion, Mr. Winch spoke appreciatively of the wholehearted co-operation which the Gas Company had received from the Technical College without whose assistance the course could not have been contemplated.

Mr. E. Purvis (Head of the Engineering Department of the Technical College), congratulated the members on their capacity for work, their tolerance, and good nature towards each other which was particularly necessary during the early stages when a common starting point for study had to be sought and found.

A further matter for congratulation was in the fact that immediately after a fairly gruelling examination paper—Applied Mechanics—the group had no hesitation in congregating to witness a practical demonstration in the kinetics of flight given by Cambridge University *v.* the Australians.

In the matter of text books, it was the duty of all the members as they departed their several ways, to bring to the notice of all and sundry the complete lack of standard text books on modern gas engineering. The staff of the College were unanimous in their feeling that the course had been the means of increasing their circle of friends.

Mr. P. S. Jewell (Chemistry Lecturer of the Technical College) expressed his view that the social and working relationships of the group during the course had been so pleasant that it would be a pity if contact were to be lost. He said that the College was a fairly new College and it had no old students' society. He had always hoped there might be one and he suggested that the students of the Intensive Course might form the nucleus of such an organization which would enable the students to keep in touch with one another through the College, and perhaps to arrange occasional meetings.

He felt that the course had been a particularly happy one and that every effort should be made to preserve the good spirit which had existed throughout.

Mr. Jewell's suggestion was enthusiastically received.

DUNDEE W.G.C.

The Dundee Branch of the Women's Gas Council has just completed its first year. Mrs. W. M. Buchanan, Organizing Secretary, visited the Branch for its annual meeting on April 21. From

left to right, those in the group are: Mrs. T. M. Lappin; Mrs. E. S. Douglas (President of the Dundee Branch); Mrs. Buchanan; Mrs. W. S. Johnston (Vice-President of the Dundee Branch); Miss M. Smith (Secretary) and Miss B. Stoddart.

Stamford Town Council has renewed for two years its street lighting contract with Stamford Gas Company.

Nottingham Corporation Gas Department's Bad Debts are phenomenally low, it was reported at a meeting of the Gas Committee. Out of a total turnover of £1,135,738 last year's bad debts amounted to only £80. Coal stocks are higher now than at the same period last year, despite the fact that the undertaking is selling more gas. The Committee agreed to purchase land to establish a governor house at Hucknall to give a better service in that area.

GAS-WORKS RECONSTRUCTION SCHEME AT BRISTOL

THE Ministry of Fuel and Power have approved the main items in the first stage of a scheme of major reconstruction to be undertaken by the Bristol Gas Company at their Stapleton Road Works, the authorization covering an expenditure of nearly £1,250,000. The present gas output from these works is 8 million cu.ft. per diem from machine charged horizontal and continuous vertical plant ; and the complete scheme, which has taken over two years to prepare, will provide eventually an output from the works of 30 million cu.ft. per diem.

The first stage of the scheme provides for a new continuous vertical retort installation of 10 million cu.ft. per diem capacity complete with coal and coke handling and storage plant ; and when this project is complete, which is estimated to be in 1953, it will displace the existing horizontal and vertical plants, which will then have reached the end of their working life. It is proposed to follow on the first new installation with a second 10 million cu.ft. installation, and the plant now approved is arranged to allow for this.

In view of the proximity of the works to residential areas, one of the two major features of the new plant will be the provision for reducing to an absolute minimum the emission of dust and fumes into the atmosphere, the other major feature being the mechanization of carbonization and materials handling plant on most modern lines to dispense with the heavier types of labour.

Contracts have now been placed for the following plant: Carbonizing plant, West's Gas Improvement Co., Ltd. ; Coal Handling and Storage, Strachan & Henshaw, Ltd. ; Coke Handling, Grading, and Storage, W. J. Jenkins & Co., Ltd.

Carbonizing Plant

The carbonizing plant will consist of four benches each containing 32 50 in. Glover-West vertical retorts in units of four, heated on the West's "balanced heating" principle. Fuel gas will be generated in eight West's automatically-controlled mechanical producers with two additional producers as standby. Waste heat from the settings will be recovered in six Spencer-Bonecourt boilers, two being standby, at a working pressure of 200 lb. per sq.in. The waste heat boilers will be carried on the first floors of two boiler houses built integral with the retort house, each to serve the adjacent five million cu.ft. capacity carbonizing unit, while the ground floor of each boiler house will contain a solid fuel chain grate boiler to be let under separate contract. On the floor above the waste heat boilers, there will be, in one house, an instrument and control room and stores, and, in the other house, a dining room with accommodation for washing and changing for the personnel manning the carbonizing plant.

Coke will be discharged automatically from the retorts into a system of water-flow conveyors. Fuel for the mechanical producers and solid fuel boilers will be brought back by band conveyors from the coke grading and storage plant outside the retort house so that any grade or a mixture of grades can be selected for use in the retort house and boilers to suit the individual coke sales requirements.

Coal will be received from wagon tippers or from stock and will be fed by specially designed, variable speed, reciprocating feeders on to duplicate band conveyors through British Jeffery Diamond single roll coal crushers into twin lip-bucket conveyors of 120 tons per hour capacity, elevated, and distributed by shuttle band conveyors into coal bunkers of 60 hours' storage capacity superimposed over the retort benches and carried on steel structure independent of the retort bench steelwork.

Dust extraction plant serves the whole of the installation with collecting points at each point of transfer from one conveyor to another, and vacuum cleaning plants will be provided to serve all floors of the retort house and boiler houses. Ash from the mechanical producers and solid fuel boilers will be handled by band conveyor and automatic skip hoist to an overhead storage bunker ready for loading into road or rail vehicles.

Coal Handling and Storage Plant

Coal will be discharged from the works sidings by means of twin "Rotaside" wagon tippers each capable of handling 20-21 ton wagons per hour into twin reinforced concrete feed and buffer storage bunkers for conveying to the crushers and retort house or stock, the tippers being equipped with a unique system of obviating dust emission into the atmosphere recently developed by Messrs. Strachan & Henshaw, Ltd. From the feed bunkers, coal may also be handled by 6-ton telpher machines with Priestman combined digging and scraping type grabs and put into stock by a comprehensive telpher system incorporating a 120 ft. span travelling transporter bridge with twin telpher tracks which will enable the telpher machines to cover the whole of the coal stocking ground with an average handling capacity of 50/60 tons per hour per machine.

Coke Handling, Grading, and Storage Plant

From the water flow conveyors in the retort house, coke will be handled by twin enclosed band conveyors either to ground stock or to reinforced concrete grading and storage bunkers of 1,000 tons capacity, prepared for future duplication and with a 120,000 gallon water storage tank superimposed on the main structure. The bunkers will be served by twin lines of screens each of 45 tons per hour capacity and composed of vibratory type, double deck, primary screens followed by reciprocating tray type screens with means for varying the storage of each grade to suit individual coke sales requirements. A comprehensive band conveyor system provides for handling any grade of coke to the retort house or for segregation in the ground stock, and is prepared for the second installation of a 10 million cu.ft. capacity carbonizing plant.

Dust extraction and vacuum cleaning plants are a feature of the grading and storage plant, which also provides for feeding dust-free coke into road and rail vehicles. An electric lift will serve the top floor level of the plant and a bagging platform with automatic bagging and weighing machines will be provided. An automatic skip hoist will elevate run-of-retort coke from ground stock for conveying to the grading plant.

Storage and Ancillary Plant

To meet the future increased output of the works, adjacent land has been purchased as a site for a welded, spirally-guided gasholder of 6 million cu.ft. capacity in a reinforced concrete tank ; the preliminary designs for the holder and tank are now in hand.

The scheme provides for re-modelling the whole of the existing wet and dry purification and by-products plants in preparation for the increased output from the works, including a complete new purifier installation of 10 million cu.ft. per diem capacity in the first instance, prepared for extension in the immediate future to 20 and then 30 million cu.ft. Provision is also being made for utilization of surplus waste heat steam for electric power generation, and a comprehensive exhaust steam system will serve the by-products plant and hot water and space-heating installations throughout the works.

The policy of the Company is to go ahead with all possible speed, as far as forthcoming nationalization and present Government controls permit, to meet increasing load from the rapid development of both new housing projects and expanding industries in and around the present Bristol area of supply ; the already extensive distribution system is being developed and extended to serve this field of development. The Company has also plans for developing their Canons' Marsh Works, which has at present an output of 6 million cu.ft. per diem, to 12 million cu.ft. in the future.

1948 "JOURNAL" DIRECTORY

In order to keep the Directory information up to date, the following alterations and corrections which have been notified during the past month should be noted in the 1948 issue of the "JOURNAL" Calendar and Directory:

Page 54.—NORTHAMPTON.—Colonel G S. Eunson, *Ch. & MD.* retired ; H. Banks, *CE. & M.*

,, 58.—PORT TALBOT.—W. D. Rees, *Dep.E. & M.* (instead of *Asst.E.*).

,, 84.—WREXHAM.—J. F. Lloyd, *E. & M.*; R. A. Jones, *S. & Comm.M.*

GAS METER FEES

The Minister of Fuel and Power has made the Gas Meter (Fees) (Amendment) Order, 1948, under Section 11 of the Gas Regulation Act, 1920, substituting the following Schedule for the Schedule attached to the Gas Meter (Fees) Order, 1922, as amended by the Gas Meter (Fees) (Amendment) Order, 1936:

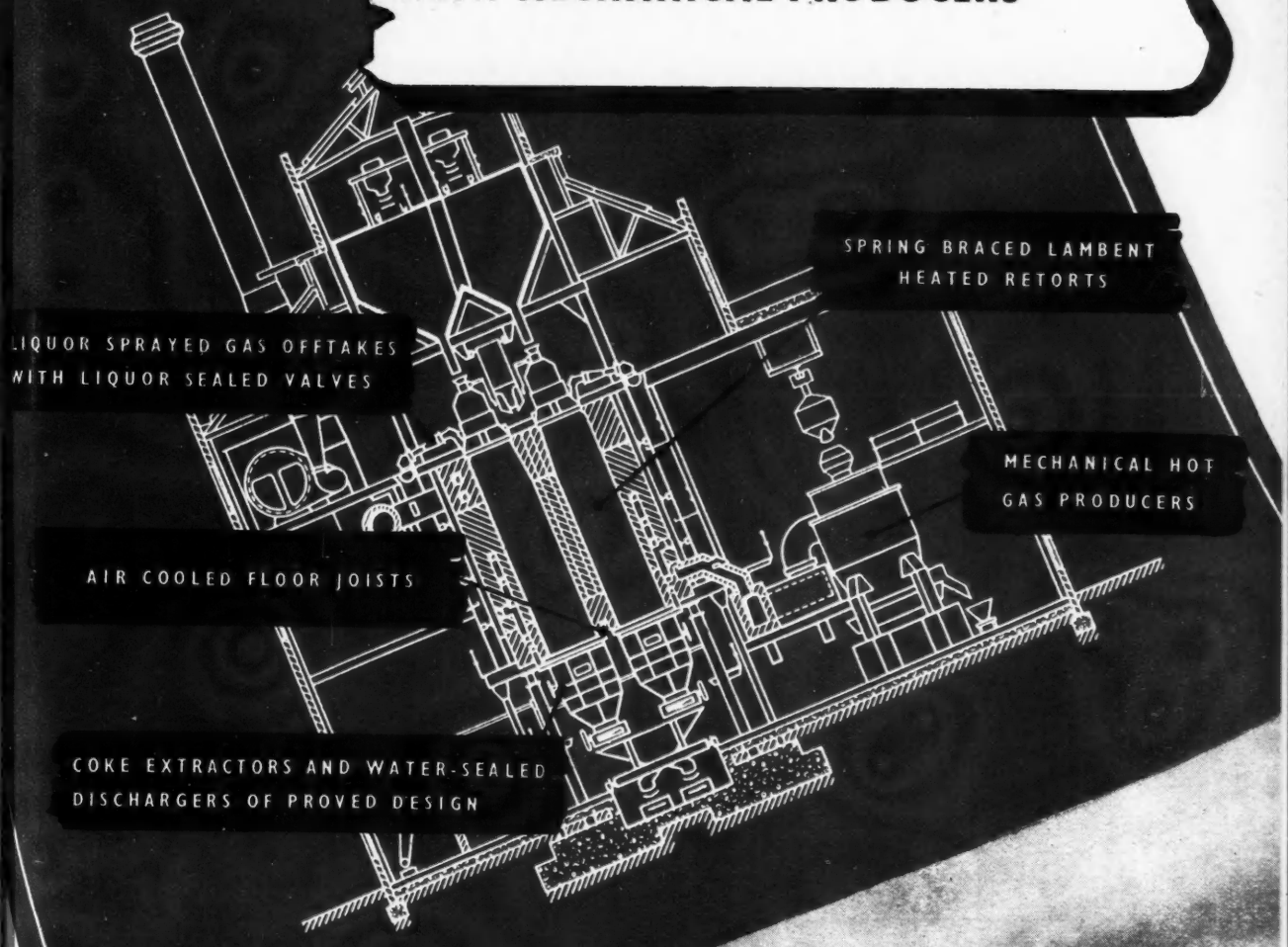
For all meters with a measuring capacity up to 50 cu.ft. per hour (as indicated on the meter by the maker) 1s. 6d.

For each additional 100 cu.ft. or part thereof in the case of a dry meter 9d., in the case of a wet meter 1s. 1½d.

For a meter which by means of a mechanism appropriate to the declared calorific value of the gas registers in terms of therms and multiples and fractions thereof, in addition to the above fees, 9d.

The Order came into operation on June 1, 1948, and is obtainable directly from H.M. Stationery Office, at York House, Kingsway, London, W.C.2; 120, George Street, Edinburgh, 2; 39-41, King Street, Manchester, 2; 1, St. Andrew's Crescent, Cardiff; or through any bookseller.

A MODERN RETORT HOUSE —
W-D CONTINUOUS VERTICAL RETORTS WITH MECHANICAL PRODUCERS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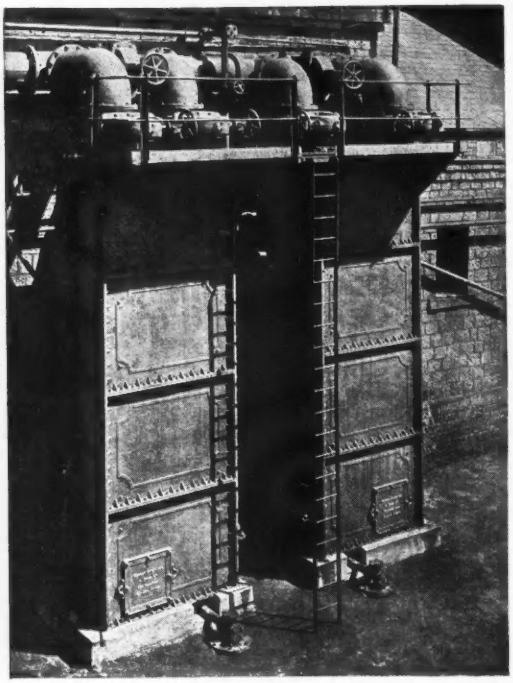

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SOCIETY OF BRITISH GAS INDUSTRIES

POINTS FROM THE COUNCIL'S ANNUAL REPORT

THE Society of British Gas Industries has made the following appointments for the session 1948-49: President, Sir Frederick West, G.B.E.; Chairman, Mr. H. S. Cheetham; Vice-Chairman, Major W. Gregson. Chairman of Sections: 1, Retort Settings, J. Simpson; 2, Retort Mountings, Condensers, and Purifying Plant, B. C. Morton; 3, Conveying Plant and Labour Saving Machinery, F. B. Holmes; 4, Gasholders, L. Hartley; 5, Meters, Norman Smith; 6, Gas Stoves, F. A. Hooper, 7, Gas Lighting Equipment, Gas Fittings, and Burners, W. R. Edgar; 8, Manufacturers and Contractors for Gas-works not included in the foregoing or following sections, W. H. G. Roach; 9, Industrial Gas Equipment, P. Hopkinson; 10, Fireclay Goods, R. L. Gardner, 11, Exhausters, Boosters, and Compressors, F. H. Wilkinson; 12, Chemical and Residual Plant, N. Wilton; 13, Water Gas Plant, L. Walker, 14, Contractors of Coal for Gas Manufacture, no nomination; 15, Tubes and Pipes, H. H. Stone; 16, Water Heaters, G. Ewart; 17, Scientific Instruments, L. B. Lambert; 18, Coke Ovens, D. T. Barritt.

Hon. Treasurer, R. B. Potter; Hon. Secretary, Colonel O. B. F. Planck. Elective Members: L. A. Bratt, R. J. Rogers, J. A. Drake, A. Watson, G. W. Allott, H. F. Potter, T. F. C. Potterton, and D. Rider.

The Council's report for 1947-48, records that Sir Frederick West succeeded Sir William Larke as President of the Society; Mr. D. Rider succeeded Mr. A. Watson as Chairman of the Council, and Mr. H. S. Cheetham served as Vice-Chairman. The Council has met at regular intervals throughout the year.

Referring to the Gas Bill the report states: The case for the public ownership of the gas supply industry was stated by the Minister of Fuel and Power to rest on three propositions: First, that the present structure of the industry was not conducive to economic efficiency; second, that the present legislative framework was a major obstacle against achieving great efficiency; third, that from every angle the most suitable structure for an efficient gas industry could only be achieved by organization under public ownership. Competition between gas and electricity was to continue, though subject to restriction. Effective co-ordination in the field of fuel and power as a whole was to be brought about not as an end in itself but, so it was stated, to secure the satisfaction of the consumers' needs at the minimum cost to the community. Issue on the whole question has been joined in Parliament and by the British Gas Council representing the gas supply industry. Inevitably the efficiency test by which nationalization ultimately will be judged is whether or not as a result the consumer receives the best service at the lowest cost.

Gas Bill and Plant Manufacture

The Electricity Act gave powers to the Central Authority to manufacture plant and fittings except for export. The Gas Bill gives similar powers to the Gas Council, but it also gives powers to manufacture plant and fittings for themselves to the twelve Area Boards "after consultation with the Gas Council." It has been stated by the Minister, in support of these powers being given to Area Boards, that this was due solely to the decentralized structure proposed for the nationalized gas industry. The Gas Area Boards are to be more independent bodies than their electricity counterparts, and the power was stated to be merely one aspect of their autonomy. The issue of whether the Area Boards should have these powers was pressed unsuccessfully to a division in Committee by the Opposition. In the course of the Second Reading it was stated that if the manufacturers went on developing and giving the nationalized industry a fair deal, it seemed to the Government that they had nothing to fear from these powers. On the Society's side the Council has been at pains to impress upon the Ministry its anxiety that if there is to be competition with a nationalized industry it should be on a basis of fair trading and fair costing, and that there should be reasonable safeguards for the interests of the Society's members. These representations have been sympathetically received at the highest level, and there is, and indeed must be, a realization among all fair-minded people of the inestimable services which have been rendered to the gas supply industry all through the years by the Society's members.

Joint Consultative Committees

While the circumstances of impending nationalization have very understandably tended to dominate the affairs of the gas supply industry during the past year, much useful work has been done in co-operation with the Society. The Joint Consultative Committee for Domestic Uses has met on a number of occasions to discuss common problems, and in regard to many of them it has been possible as a result to take concerted action to the mutual benefit of those concerned. A Joint Consultative Committee for Industrial Uses has also been brought into being during the year and has quickly achieved concerted action on several matters of common interest. Without doubt no small part of the success achieved by these two committees has resulted from the fact that they have in their respective spheres been available, as was intended, for consultation. Since the discussions that take place commit no one, they have been conducted with much greater freedom than heretofore, and have in the long run as the result of free exchange of views achieved far more than the work of earlier committees, where efforts on either side to delay or upset an embarrassing or imposed decision produced a general sense of frustration and ineffectiveness. There has been co-operation with the British Gas Council in regard to exhibitions, and in particular the Ideal Home Exhibition in London and the Industrial Gas Exhibit at the B.I.F., Birmingham.

The Society's relationships with the Institution of Gas Engineers continue on an entirely friendly basis and good work is being achieved by committees of that body on which the Society is officially represented, such as the Joint Lighting Committee and the Meters Committee. There has been useful co-operation with the Gas Works Safety Rules Committee of the Institution in regard to purifiers and electrostatic detarrers.

Gas Research Board

The chief interest that the I.G.E. and the S.B.G.I. share in common is the Gas Research Board, which was brought into being as the result of their joint efforts. An important development has recently taken place in that the annual meeting of the Board includes now not only the formal business but also scientific discussions on the programme and work of the Board. During the year the active research programmes of the Board have been reviewed, and a number of new projects have been started which are aimed at the investigation of urgent problems arising from existing practices. This represents a change of policy which the Council of the Board feels is justified by present-day conditions, but it does not mean that the prosecution of long term research which is more properly the function of a research association will decrease in volume. Among other important developments is the proposal to expand considerably the volume of work on combustion research. While the problem of obtaining adequate staff is still acute, the purchase has been completed of an estate at Beckenham which is suitable for development as a headquarters. Present-day conditions will make it necessary to adapt certain existing buildings to meet immediate requirements rather than to erect new laboratories which would be preferable, but it is hoped to start the adaptation without delay. The Society's six representatives on the Council of the Gas Research Board continue to take a very active interest and to play an important part in the work of the Board.

Home Trade

The expectation of the Council by and large was that within two or three years from the end of the war the Society's members would have achieved their pre-war levels of production and be within sight of exceeding them. It seemed evident that a great volume of production would be needed to catch up on the lack of production during the war years and to overtake those six years of accumulated depreciation and obsolescence. These hopes have not, however, in the main been fulfilled, and their fulfilment seems now inevitably to be deferred for some time ahead at least. The housing and re-housing of the population and assured fuel supplies were very properly recognized as of the highest importance in the immediate post-war programme. In the building and allied industries an excessive volume of work having, however, been authorized, the resulting inflation actually retarded progress, and therefore the completion of all types of essential building. The fuel industries not only experienced the serious winter crisis of 1947, resulting in programmes throughout industry being reviewed, but the ultimate and inescapable remedy of greatly increased coal production is still at a comparatively early stage of realization. Overall availability of materials to the Society's members has been such that the output of consumers' appliances has been restricted in some cases to no better than 50% of pre-war. The incidence of purchase tax at a penal level has latterly in certain lines reduced consumer demand to well below that level. Gas-works plant has fared relatively better during the year in allocations of raw materials, though latterly there has been a substantial cut in the allocation of steel for gas-works plant. The most serious problem is the supply of silica bricks, which is substantially short of demand, and indeed the only solution to this problem seems to be a very considerable increase in producing capacity by the erection of new plant and the recruitment of additional labour. The apparently interminable problems that face all producers these days have continued to exert an adverse influence on production throughout the year.

though despite all the difficulties and uncertainties with which those engaged in the engineering industries have been faced, increases in production were achieved by certain sections of the Society's members during 1947. Latterly a serious attempt has been made to secure the pruning and redeployment of the national capital expenditure commitments so that effort might be concentrated on the essential work.

The Ministry of Fuel and Power continue to act as the production authority for all requirements up to but short of the domestic meter. During the year the production responsibility for meters and all consumer appliances has been transferred from the Ministry of Supply to the Ministry of Works. The Society continues to maintain the closest possible contact with the various Government Departments responsible for the exercise of control over the various branches of activity covered by the Society's members, and the Council is glad to place on record its appreciation of the sympathetic understanding which has been shown in many directions and on many occasions by these departments in relation to the problems of the industry during the year under review.

The Society has worked on many questions during the year with such organizations as the Federation of Birtish Industries and the British Standards Institution.

Export Trade

The Gas and Coke Oven Industries Export Group which the Society staffs and administers has been active in regard to the affairs of those of its members with export trade to handle. Important contracts have been obtained by members of the group for gas-works plant and coke oven plant overseas, and there has been a steady flow of business both for gas appliances and gas meters in markets that are valuable to this country. The Empire countries provide the natural outlet for the industry, but in addition some progress has been made more recently in other markets, such as those in South America, Europe, and the Middle East.

In the case of appliances there is a difficulty in stepping up exports quickly, since the types on which the industry has had to concentrate to meet the requirements of the national housing drive are not types which are readily saleable in the export markets. The major difficulty in the way of substantially increased exports of gas appliances is the necessity for greatly increased allocations of raw materials, and it is important that sufficient progress should be made with the programme for the home market for the export market to receive increasing attention. Results for 1947 were a little better overall than those for 1946, but an important move forward is wholly dependent upon increased allocations of materials being made to the Society's members concerned, and more particularly in the case of gas appliances.

General

The Economic Survey for 1948, recently published as a White Paper, states that without American aid the prospect of a decent standard of living will be delayed for years. Outlining what is described as the broad strategy of external recovery, it points out that the speed of recovery will depend on the people's willingness to make efforts and sacrifices to increase production. The report concludes that if time can be given us, the great tasks of economic recovery will be carried through. The first line of defence is clearly the work of British hands and British skill and equally clearly it is sheer fantasy to suppose that shorter hours can have any place in British industrial life to-day. The key to reductions of costs and prices which industry is asked to achieve is increased productivity and stability in prices of raw materials, basic commodities and services, many of which are now directly or indirectly under the control of the Government. Indeed, if a lasting improvement is to be achieved in the country's fundamental economic position, it seems inescapable that the Government must reduce or postpone its own expenditure in all categories not strictly essential to the economic and strategic survival of the country.

The Future

It is therefore at a time of difficulty and uncertainty in the conduct of their business that the Society's members face the problems that will arise on the nationalization of gas supply. Customers with whom over generations they have a record of amicable working will become their potential competitors. As the Council now sees the position, there exists an honoured tradition of co-operation within the gas industry working at all levels which has stood the test of time and experience without sustained challenge, and in an atmosphere of mutual confidence the Society's members have brought to the service of the public through the gas supply industry a fund of knowledge and experience which has been gained in this and other industries. Assets such as these are not written into legislation, but their value is within the knowledge of those in whose hands the future of the gas industry lies. Certainly there is nothing ready to hand to take their place nor indeed effectively to challenge their continued employment in the common interest. The Council is confident that it would be the unanimous wish of the members that at this time it should take the occasion of the Society's annual report publicly to assert that the Society's members, in the assurance that they will be given a fair field both in trading and in costing, are able and indeed anxious to give to a nationalized industry the same loyal service as for generations they have given to the industry of which they have been proud to form part.

SOUTHWOLD GAS LIGHT COMPANY'S CENTENARY

The Southwold Gas Light and Coke Company, Ltd., celebrated its centenary as a private enterprise with a dinner at the Swan Hotel, Southwold, on May 11, those present numbering nearly 100, including Directors, shareholders, employees, and prominent personages, among whom were the Mayor and Mayoress of the ancient Borough, the Town Clerk, and other Corporation officials, the Southwold Water Works Company's Manager, the Eastern Electricity Board's local Manager, Managers from five neighbouring Gas Companies (Mr. T. V. Johns, of Lowestoft ; Mr. J. H. Greenacre, of Yarmouth ; Mr. A. Spencer, of Saxmundham ; Mr. C. R. Fowler, of Leiston and Aldeburgh ; and Mr. L. C. B. Williams, of Thetford), also Dr. F. H. Moore (Ministry of Fuel and Power), and Mr. Leslie F. Stemp (Legal Officer, British Gas Council).

Apologies for absence were received from Mr. Edward Evans, M.P. (delayed at the Hague Conference), Mr. P. C. Loftus (High Steward of Southwold, indisposed), and Mr. Ronald A. Weston (President, Eastern Counties Gas Engineers' Association).

In the absence of Mr. E. Evans, M.P., the toast " The Gas Industry " was proposed by Mr. **Johns,** who after saying that he was of opinion that gas would be made synthetically within the next 10 or 15 years, added: " We should have liked to see the personal contact with the people retained, but if the vote says ' nationalize,' we as engineers can assure the Government that we shall do our best to see that the industry of the future is as good as it has been under private enterprise."

Responding, Mr. **Stemp** said that the industry was producing the astronomical total of 500,000 million cu.ft. per annum, and since 1920 the output of gas had practically doubled in the face of severe competition from electricity. All this had been accomplished by private enterprise and endeavour. He gave details of the Gas Bill and asked who was to benefit by it. They were giving up a well tried friend for a little known acquaintance at a time of grave crisis in their national history.

He detailed the outlook from the consumers' point of view, asserting that they would not benefit from nationalization, and the workers would become " cogs in the wheel." It would be miraculous he said, if the newly-constituted Gas Boards could reduce prices or even hold them at present levels. In a large number of cases, shareholders would lose an income of 15 to 40% on the transaction. " Nevertheless," continued Mr. Stemp, " we should not be true to our country if we did not accept in a spirit of loyalty what Parliament decided, and did not do our very best under nationalization."

Mr. **L. S. Harrisson** (Secretary of the Southwold Water Works Company, Ltd.) proposed the toast of the Southwold Gas Light Company, pointing to the Company's achievements. He mentioned the excellent street lighting, a contract held by the undertaking for the whole 100 years.

Replying, Mr. **Andrew J. Critten,** J.P., M.B.E., Chairman of the Company, who presided, declared that when the Government took over it would take an undertaking not in its dotage, but one that was virile, active, and capable of serving the public in the century to come as well as it had done in the past 100 years. Mr. Critten referred to the happy relationship existing between the Board and the employees.

Mr. **H. A. Adnams** (Vice-Chairman), in proposing the toast of the Guests, coupled the names of the Mayor of Southwold (Alderman A. G. Baggott), Dr. Moore (Ministry of Fuel and Power), and Mr. Joseph H. Troughton, J.P. (Newmarket). The Mayor expressed regret at the passing of the Company, and wondered if the public would get the efficiency they had received in the past.

Dr. **Moore** spoke of his pleasure at being present, and congratulated the Company on its progress, and Mr. **Troughton** spoke of his early associations with the undertaking. Despite every competition, he considered gas had a great future.

Mr. **Arthur Fairweather** (Director) proposed " The Staff," and paid eloquent tribute to them, mentioning the happy feelings which had always existed. He felt it was a proud achievement that the supply had never failed.

Mr. **George Crick** (Engineer and Manager), in reply, related some amusing experiences during his 42 years with the Company. Mr. **W. D. Crick** (Secretary) also replied.

Films relating to the gas industry were shown to complete an enjoyable evening. Films were also shown at the local cinema during the week, and over an hour's programme was exhibited to the school children at the area schools, when the Chairman of the Company talked to them of the Company's progress, and of how the town had developed since 1848. Special window displays in the Company's showrooms also attracted a good deal of attention during the week of the celebrations.

PRODUCTION OF PEAK LOAD GAS BY THE PARTIAL COMBUSTION OF OIL*

By M. MACCORMAC, D.I.C., Ph.D., Gas Light and Coke Company

FOR many years the Gas Light and Coke Company has felt that, although the carburetted water gas process is suitable for meeting seasonal variations in gas demand, a simpler process, requiring less labour and capital investment, is needed as a standby. During the war the need was so urgent that it was necessary to improvise, and a process involving the production of carburetted producer gas in existing water gas sets was investigated. This process was only partially successful, but experience gained with it indicated that a satisfactory solution of the peak-load problem might be obtained by partial combustion of oil with a very limited quantity of air. A number of processes for gasifying oil by partial combustion have been known and operated successfully for several years, and two of them, the "improved Dayton" process[1] and the G.E.I.M. process,[2] include features which are similar to certain features of the process developed by the Gas Light and Coke Company in a pilot plant. The Gas Light and Coke Company's process, however, incorporates certain new features which are based on an experimental investigation into the mechanism of the gasification process. It is proposed in this paper, therefore, first to discuss the peculiar characteristics of hydrocarbon combustion on which the process depends; and then, having described the pilot plant, to give some of the results obtained.

The Combustion of Hydrocarbons

(A) THE "NORMAL" FLAME AND THE "COOL" FLAME

It was shown by Townend and co-workers,[3] in the years preceding the recent war, that most hydrocarbons and hydrocarbon derivatives of the general form CH_2R (where R is a hydrocarbon, ether, or aldehyde radical), under suitable conditions of temperature, pressure and mixture composition, can undergo combustion by two different mechanisms. This is shown by the complex curves obtained when the minimum pressure below which flame cannot propagate is plotted against the mixture composition (Fig. 1), or when the ignition temperature of a given mixture is plotted against the pressure (Fig. 2). These different types of flame are referred to as "normal" and "cool" flames, respectively.

The "normal" flame is characterized by a high reaction rate in the flame-front where the temperature rise is almost instantaneous. The "normal" flame propagates most readily in mixtures in which the ratio of oxygen to fuel is about that required for complete combustion; and in mixtures containing a considerable excess of hydrocarbon it produces hydrogen and free carbon. This flame, therefore, is of no interest for gas making except in so far as the conditions which give rise to it (high oxygen concentration and high temperature) should be known so that they may be avoided.

By comparison with the "normal" flame, the reaction rate and the temperature gradient in the "cool" flame are low. The "cool" flame has, in fact, the characteristics of a chain reaction of the type classified by Semenoff[4] as a degenerate explosion; little heat is evolved, and the flame temperature usually does not exceed 390°C. In the ordinary way, neither all the fuel nor all the oxygen are consumed, and the chief products (apart from unchanged fuel) are water, carbon monoxide, and oxygenated compounds such as aldehydes and peroxides. The net result of the "cool" flame is, therefore, to oxidize some of the hydrocarbon molecules to less-stable intermediates which crack more readily than the original fuel. The "cool" flame propagates most readily in mixtures in which the molecular ratio of oxygen to fuel is about 1:1 or less.

(B) THE "CRACKING" FLAME.

If the "cool" flame is propagated through a mixture (not too deficient in oxygen) at a pressure greater than a certain minimum (conditions defined by the curves A—C Figs. 1 and 2), a secondary reaction in which heat is evolved takes place behind the flame front. In the presence of sufficient oxygen (A—B Fig. 1) this secondary reaction immediately gives rise to "normal" flame which is faster than, and therefore supersedes, the "cool" flame. In mixtures outside the normal flame range, however (B—C Fig. 1), the secondary reaction, which may be called the "cracking" flame, is incapable of existence without the reactions of the "cool" flame which precede it: it therefore remains a secondary reaction occurring in the products of the "cool" flame which it backs up.

Under suitable conditions, the flame-front of the "cracking" flame approaches that of the "cool" flame so closely that it appears to coalesce with it, and most of the characteristics of the "cool" flame, such as limited temperature, limited oxygen consumption, and production of aldehydes and peroxides, are masked. The lightly shaded area of Fig. 1 shows the approximate conditions under which this coalesced flame is obtained.

The degree of coalescence and the temperature of the "cracking" flame depend on the preheat and on the composition of the mixture, as well as on the pressure and on the physical characteristics of the surroundings. All oxygen in the mixture is consumed, and, if coalescence is complete, all aldehydes and peroxides are destroyed. When gas oil undergoes combustion in this way the chief products are carbon monoxide, water, methane, ethane, ethylene and other olefines. Benzene is produced

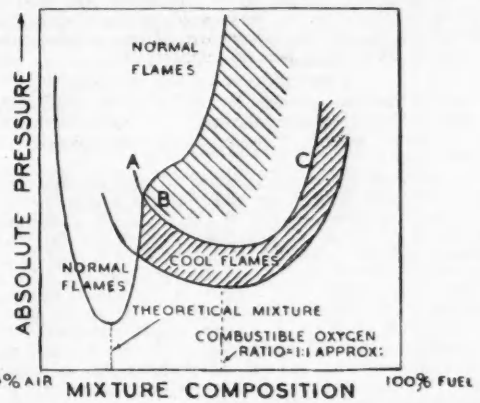

Fig. 1.—Diagram showing the influence of pressure on the inflammable ranges of combustibles giving rise to "cool flames."

by removal of side chains from aromatic nuclei; carbon dioxide by breakdown of peracids formed by oxidation of aldehydes; and hydrogen by dehydrogenation of naphthenes and breakdown of formaldehyde which is always present in the flame; but no free carbon is normally produced in the gas phase.

The chemical relationship between the "cool" flame and the "cracking" flame is best visualized if it is assumed that both flames are propagated by the same reactions giving rise to

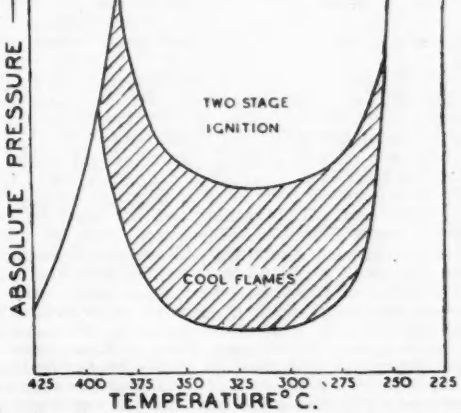

Fig. 2.—Diagram showing the influence of pressure on the ignition temperatures of hydrocarbon/air mixtures.

the same primary products, which may be peroxides of the fuel molecule. At low temperatures and low pressure these peroxides decompose to water and an aldehyde which may in turn decompose to carbon monoxide and a hydrocarbon. Under the conditions of the "cracking" flame, decomposition is more rapid; as well as carbon monoxide and water, free radicals with considerable internal energy are formed, and these decompose immediately into methyl, or ethyl (which subsequently pick up hydrogen), and lower olefines.

*From Publication GRB38, presented at the Annual Meeting of the Gas Research Board, April, 1948.

The Gas Light and Coke Company's horizontal retort oil-gas process, which was developed during the coal shortage as an emergency method of gas production to enable coal carbonizing plant to be used, depends on external heating of the reaction chamber to crack the products of the "cool" flame; but in the peak-load process, about to be described, better control and greater efficiency are attained by the use of the coalesced "cracking" flame, a suitably preheated mixture of oil and air being burnt in a well-lagged reaction chamber to give gas of the calorific value required.

Experimental

In the design of a gas generator to utilize the "cracking" flame there are two problems which have to be solved. The first is, how to mix the fuel and air at temperatures which may be above the ignition temperature without risk of premature ignition taking place. The second is, how to stabilize the flame at the correct position in the generator in such a way that it can neither "light back," nor "blow off."

In the generator about to be described, the first of these problems is overcome by very rapid mixing; while the second is solved by making the lower part of the reaction tube, where combustion takes place, part of a recuperator.

(A) Description of Pilot Plant.

The air for the process is delivered by a centrifugal fan through a Venturi meter followed by a control-valve to a gas-fired preheater, whence it passes to an inlet chamber on top of the generator.

The oil from an overhead tank is metered, and then passes through a small gear pump fitted with a spring-loaded by-pass, whence, at a pressure of 120 lb. per sq. in., it is delivered to the oil preheater. The oil preheater consists of 100 ft. of ½ in. mild-steel tubing suspended in the form of a coil in a vertical 6 in. flue heated by gas. From the preheater the oil is delivered (usually as a superheated liquid) to the spray situated in the cover plate of the air inlet chamber. The spray, incorporating the oil-control valve, is of a very simple pressure-jet type, with the needle of the valve actually projecting through the orifice in such a way that the act of shutting the valve cleans the orifice. Trouble due to blockage of any other part of the oil system has not been experienced.

The generator consists of a steel shell (4 ft. 6 in. in dia. × 5 ft. 6 in. high) supported on concrete piers so as to leave room for access underneath. The generator shell is lined with 12 in. of insulating material and 9 in. of refractory, leaving a cylindrical space 12 in. in dia. in the centre. The floor of this space is concave, with a 2 in. hole in the centre through which it is possible to empty out any scale, &c., which collects there. This 2 in. hole is normally closed by a flange carrying a ¼ in. tube through which gas can be supplied to the generator to raise heats preparatory to gas making.

The generator is surmounted by a gas outlet chamber 18 in. in dia. × 24 in. high, which is also lined with heat insulating and refractory material, so as to leave a cylindrical space 12 in. in dia. which is continuous with the corresponding space in the body of the generator. A 9 in. connexion (lined with 1½ in. of refractory material) in the side of the outlet chamber conducts the gas away to the liquor sprays and hence to the wash box or stack.

On top of the outlet chamber, and separated from it by a steel flange carrying the reaction tube, is the air inlet chamber, 14 in. in dia. × 18 in. high with a 4 in. air inlet in the side. This chamber is lagged externally, but is not lined.

The mild-steel reaction tube is located in the centre of the generator: its total length is 7 ft. 5 in. (internal dia. 6 in., external dia. 7 in.), and 16 1½ in. × ¼ in. fins, 5 ft. long, are welded onto the lower end. The bottom end of this tube is 3 in. above the concave floor of the generator, while its upper end projects 16 in. through the flange which supports it, and which separates the air inlet chamber from the generator.

The top end of the reaction tube is fitted with a 9 in. flange, on the upper surface of which 12 guide vanes are welded in such positions that they are in planes tangential to the inside surface of the reaction tube. The upper edges of these vanes almost touch the cover plate on the top of the inlet chamber; thus, the air, as it leaves the inlet chamber to enter the reaction tube, has to pass between these guide vanes, and so enters the reaction tube with a high tangential velocity which accelerates mixing with the oil.

The oil spray is loated centrally in the cover plate of the air inlet chamber, with the orifice of the spray just inside the reaction tube. The body of the spray is surrounded by a 2 in. connexion through which steam may be admitted to the generator.

Two 1½ in. sight cocks are mounted on the cover plate of the inlet chamber. One of these enables the operator to inspect the annulus surrounding the lower end of the reaction tube, while the other enables him to inspect the inside of the tube at any time and watch what is going on there. Since it is essential that the operator should have ready access to these sight cocks and the oil-control valve, the operating platform of the plant is situated on top of the generator, and all controls, gauges, meters, &c., are placed there.

For experimental purposes the cover plate of the generator inlet chamber was originally provided with connexions through which it was possible to take temperatures and gas samples at any depth in the generator, either inside or outside the reaction tube. Since, however, thermo-couple sheaths inside the tube interfere with mixing and reaction, while temperatures recorded outside are of no practical significance, the use of these connexions has been discontinued. If a record of generator temperatures is required it can be taken from the 2 in. connexion at the base of the generator.

From the wash box the gas passes to a washer cooler, exhauster, detarrer and wet meter.

(B) Operation and Gas-making Capacity of Plant.

Before gas-making is started the inner face of the generator lining must be heated to at least 400°C. This is done by burning gas in the generator base. To enable the oil to be preheated before gas making is commenced a by-pass is provided close the spray, through which oil can be circulated through the preheater and back to the feed tank, *via* a cooling coil.

As soon as temperatures are adequate for gas making, the oil by-pass is shut, the oil spray opened, and the gas supply to the generator base turned off.

Usually, because of the high oxygen concentration in the generator at the moment of starting, the "normal" flame lights back to the top of the reaction tube, where it burns as a brilliant yellow conical flame at the interface where the air and oil meet. This flames produces soot and free hydrogen; it must, therefore, be extinguished either by momentarily shutting off the air, or by turning on steam to the jacket surrounding the oil spray.

Once it has been extinguished, the "normal" flame cannot return so long as the plant is operated correctly. It can, however, be relit spontaneously if the interface where mixing starts is allowed to come into contact with a surface at a high temperature, or if the air:oil ratio is increased either accidentally or when shutting down. It is to avoid spontaneous ignition of the "normal" flame at the interface where mixing starts, that the top of the reaction tube is cooled by projecting into the air inlet chamber.

As soon as the "normal" flame has been extinguished it is replaced by the "cracking" flame which lights spontaneously lower down the reaction tube. The exact position that the "cracking" flame takes up depends on the air:oil ratio, the preheat, and the throughput. If preheat is insufficient to bring about complete vaporization of the mixture, the unevaporated oil is thrown out of the gas stream onto the walls of the reaction tube where it runs down as a thin film of liquid. The longitudinal fins on the outside of the tube increase the quantity of heat transferred to this film from the hot gases in the outer annulus. The liquid film as it evaporates keeps the walls of the tube cool, and so helps to delay reaction until evaporation is complete; this is essential for efficient gas making.

From this it follows that with low preheat good atomization of the oil is not important; the oil is more likely to be evaporated before it reaches the flame if it is projected onto the hot walls of the reaction tube, than if it remains as droplets in the gas phase. Increase in oil preheat, however, automatically improves atomization.

With high preheats no liquid reaches the walls of the reaction tube, there is very little delay in the establishment of flame in the mixture, and the whole reaction is completed within about 0.3 sec. of the reactants meeting. This corresponds to a processing rate of about 50 gal. of oil per cu.ft. of reaction space per hr.

The maximum gas output of the pilot plant generator is in fact limited to 4,500 cu.ft. per hr. by the back pressure of the ancillary plant. But, when operating without preheat in the reactants, the output would in any case be restricted to about this figure by the quantity of oil which can be evaporated by heat transferred through the walls of the reaction tube.

Gas oil always contains a small quantity of polymerized material which cannot evaporate at all under the conditions in the reaction tube. This polymerized material runs down the walls of the tube until it reaches the flame, where it cracks and leaves a ridge of scurf. The rate at which scurf collects is negligible at high preheats, and even at low preheat the amount formed in 12 hr. is small; nevertheless, since it interferes with heat transfer through the walls of the reaction tube, it must be removed by turning off the oil and blowing for 10 min. with the stack open whenever it is seen to be present in quantity. Alternatively, scurfing may be carried out once every 24 hr. as a routine.

The oil used throughout the investigation was ordinary gas oil, a typical sample of which had the following characteristics:—

Specific Gravity		0.852 at 60°F.
Boiling Range		200° to 350°C.
Residue After Distilling to 350° C.		4.0%
		%
Group analysis	Unsaturateds	1.4
	Aromatics	23.5
	Naphthenes	11.5
	Paraffins	63.6
Evaluation Number (unsaturateds + paraffin)		65.0
Gross Calorific Value		19,550 B.Th.U. per lb.
Sulphur Content		0.29%

(C) Control of Gas Quality.

Importance of Air:Oil Ratio and Preheat.

At an early stage in the investigation it became clear that the quality of the gas made is related to the flame temperature, and attempts were made to use this to control gas quality. This was unsuccessful, however, not only because the necessary thermo-couples interfered with mixing and reaction in the generator, but also because the method is not sensitive, and the position of the flame (the only point where the temperature has any significance) varies.

For these reasons the air:oil ratio (corresponding to the mixture composition ordinate of Fig. 1, but expressed as cu.ft. of air at S.T.P. entering the generator per 1 gall. of oil) has been adopted as the standard criterion of gas-making conditions; and, provided the preheat and oil quality are constant, it is very satisfactory.

The air delivery to the generator is actually measured by connecting the impulse pipes of the Venturi meter through a small orifice plate to a 100 cu.ft. S.H.C. meter, so that a definite fraction of the total (depending on the size of the orifice) is recorded. If the fraction recorded is the reciprocal of the air:oil ratio required, the operator has only to keep the air and oil meters in step with each other to maitain the ratio and, hence, gas quality constant.

Table 1.

Preheat at inlet generator Oil	Air	Observations	Air : Oil ratio (cu.ft. per gall.) 120	133	139	148	155	171	180	206	241
20° C.	20° C.	Calorific value (B.Th.U. per cu.ft.)						416	430	416	363
		Gas yield (cu.ft. per gall.)						218	230	276	323
		Oil efficiency (therms per gall.)						0.91	0.99	1.15	1.17
20° C.	350° C.	Calorific value (B.Th.U. per cu.ft.)				480	482	476	450	417	—
		Gas yield (cu.ft. per gall.)				189	201	221	238	289	—
		Oil efficiency (therms per gall.)				0.91	0.97	1.05	1.07	1.16	—
265°C.	350°C.	Calorific value (B.Th.U. per cu.ft.)			526	520	505	—	450	419	—
		Gas yield (cu.ft. per gall.)			180	186	198	—	240	286	—
		Oil efficiency (therms per gall.)			0.95	0.97	1.00	—	1.08	1.20	—
350°C.	350°C.	Calorific value (B.Th.U. per cu.ft.)	568	557	—	—	—	—	470	—	—
		Gas yield (cu.ft. per gall.)	155	180	—	—	—	—	237	—	—
		Oil efficiency (therms per gall.)	0.88	1.00	—	—	—	—	1.11	—	—

Preheat influences the calorific value of the gas made only at low air:oil ratios. This is clearly shown in Table 1, in which the calorific value, the gas yield, and the oil efficiencies obtained in a number of tests under various conditions of preheat and at various air:oil ratios are shown.

Without preheat, gases of any calorific value up to 430 to 450 B.Th.U. per cu.ft. can be made, the exact limit of the calorific value obtainable under these conditions depending on the heat-transfer properties of the reaction tube. By using a heat-resisting alloy tube which does not scale, it should be possible to maintain indefinitely a calorific value of 440 B.Th.U. per cu.ft., without any external preheating.

If the air before entering the generator is preheated to 350°C., the air:oil ratio may be reduced so as to give any calorific value up to 480 B.Th.U. per cu.ft.; but since, at the low air:oil ratios required for rich gas, the heat capacity of the oil is greater than that of the air, preheating the oil has a much greater effect on the temperature of the mixture and on the quantity of heat available for cracking; so that if both the reactants are preheated to 350°C. the calorific value may be raised to over 560 B.Th.U. per cu.ft.

The maximum temperature to which the oil may be preheated is fixed by the pressure at which it is delivered to the preheater in relation to its vapour pressure. No vaporization must be allowed to take place in the preheater or in the line leading to the spray: formation of a vapour-lock in the spray drastically increases the air:oil ratio by interrupting the oil supply, and the "cracking" flame, being transformed into the "normal" flame, lights back to the top of the reaction tube immediately.

For any given preheat, as the air:oil ratio is reduced there comes a point when the "cracking" flame no longer completely decomposes the primary products of oxidation, the gas begins to smell of aldehydes, the gas yield and the calorific value begin to fall, and the oil efficiency decreases very rapidly.

The oil efficiency is always greatest at high preheat, partly, no doubt, because high preheat produces better mixing of the reactants before combustion starts, so that less scurf, tar, liquor and free hydrogen are produced while the yield of gaseous hydrocarbons is increased.

At any given preheat, the oil efficiency approaches a maximum at an air:oil ratio of about 220 cu.ft. per gal. This maximum probably corresponds to the point where the flame temperature is high enough to ensure efficient cracking of those aromatic and naphthenic constituents of the oil which do not oxidize readily in the "cool" flame. Increase of the air:oil ratio beyond this point is undesirable, since the H_2S content of the crude gas rises and the tar (the yield of which is reduced) becomes viscous without any compensating advantages.

So long as the air:oil ratio is such as to give a gas of calorific value exceeding 450 B.Th.U. per cu.ft., the bulk of the sulphur in the oil passes into the tar, and the H_2S content of the crude gas after cooling is less than 4 gr. per 100 cu.ft.

(D) Characteristics of the Gas.

The gas has unusual combustion characteristics which make it unsuitable for distribution except in admixture with more normal gases. It has a high density, low flame-speed, and low flame-temperature. Without admixture it can only be burnt in burners in which restricted aeration is coupled with a low velocity at the burner point. In the Boys calorimeter satisfactory results can be obtained by using a Meker type burner with controlled aeration. Table 2 shows how the composition of the gas varies with the calorific value and the air:oil ratio.

Table 2.

Calorific value (B.Th.U. per cu.ft.)	400	450	500	550
Air : oil ratio	215	180	150	134
Oil used (gall. per 1,000 cu.ft.)	3.5	4.2	5.0	5.6
Flame temperature (°C.)	760	725	—	—
Gas analysis (by vol.)—				
CO_2	3.2	3.6	2.7	2.1
O_2	0.3	0.4	0.4	0.5
C_nH_m	11.4	14.0	15.3	16.6
H_2	5.6	3.2	2.7	2.6
CO	11.4	9.6	10.0	8.5
C_2H_6	0.8	2.2	1.9	2.6
CH_4	8.9	6.1	7.9	5.9
N_2	58.4	60.9	59.1	61.2
Specific gravity	0.96	0.99	1.00	1.02

There is no evidence that the gas contains any paraffins higher than ethane, but the richer gases contain about 0.75 gall. per 1,000 cu.ft. of light oil, which can be removed by cooling to −80°C. The removal of this oil is accompanied by a drop in the calorific value of about 120 B.Th.U. per cu.ft.

At least 50% of the light oil is low-boiling material such as propylene, butylene and amylene; 25 to 30% of the oil is benzene, and about 15% toluene. From 5 to 10% boils above 112°C. The gas contains no naphthalene.

Since, under all normal conditions, the gas contains between 58 and 62% of nitrogen, the rate of gas production (within ±3.5%) can be calculated at any time by multiplying the air rate (as shown by a gauge connected across the Venturi meter) by 79.1/60. If the nitrogen content of the crude gas exceeds 62% it is an indication of serious undercracking due to insufficient preheat. Thus, the gas produced in test 4 (Table 3) contained 64% of nitrogen.

(E) Tar and Liquor Production.

As the purpose of the investigation was to develop a process to make gas of high calorific value, full-scale tests in which the tar and liquor yields were measured have been confined to low air:oil ratios at which the calorific value is not independent of preheat.

The results of four such tests are shown in Table 3, from which it will be seen that as preheat is reduced the yield of tar and liquor increases.

The tar made in these tests was collected in two fractions, the smaller having a density of about 1.00 condensed in the wash box and foul main. This fraction is very difficult to separate from water, and appears to contain an emulsifying agent (possibly higher aldehydes and acids). It is best dried by circulating it through the liquor sprays and raising the temperature of the wash box.

The greater portion of the tar with a density of about 0.93 collected in the tanks of the washer cooler and detarrer. This tar is undercracked, has a low flash-point, and is 90% volatile at 320°C. It separates from water very readily. A satisfactory market for the light tar would do much to compensate for the comparatively low efficiency of gasification.

TABLE 3.—*Gas, Tar and Liquor Yields.*

Test No....	3	1	7	4
Air : oil ratio	133	136	145	138
Oil preheat (°C.)	310	310	340	310
Air preheat (°C.)	365	255	200	110
Rate of gas production (cu.ft. per hour)	4,400	4,100	4,100	4,150
Calorific value (B.Th.U. per cu.ft.)	557	542	536	515
Oil efficiency (therms per gall.)	1.003	0.999	0.965	0.880
Gas yield (cu.ft. per gall. of oil)	180.2	185.0	180.0	170.8
Tar yield (gall. per gall. of oil)	0.36	0.36	0.36	0.41
Liquor yield (gall. per gall. of oil)	0.11	0.13	0.13	0.23
Oil used (gall. per 1 million cu.ft.)	5,500	5,420	5,560	5,860
Tar yield (gall. per 1 million cu.ft.)	1,970	1,930	2,070	2,380
Liquor yield (gall. per 1 million cu.ft.)	600	700	750	1,350

The liquor produced under the conditions of these tests contains ketones, aldehydes and acids. Its pH value is about 4.0, and each gallon requires about 5.5 oz. of soda ash for neutralization. The soda ash is preferably added to the liquor in the washer cooler, to prevent corrosion, and the gas as it leaves the washer cooler then contains less than 1 gr. of H_2S per 100 cu.ft.

If ammonia, instead of soda, is used in this way to neutralize the liquor, the quantity required (calculated on an equivalent-weight basis) is considerably greater, being about 1 gal. of 10 oz. strength (3.4 oz. of NH_3) per 1 gal. of liquor.

Ammonia greatly reduces the smell of the liquor, possibly by forming addition compounds with the aldehydes, and this presumably accounts for the large quantity which must be used. Its use is attended by certain disadvantages, however, including a tendency to emulsify the light tar; soda is, therefore, to be preferred.

(F) HEAT BALANCE OF THE PROCESS.

Table 3a shows the approximate heat balances of the generator in each of the tests shown in Table 3. As would be expected, as the preheat is reduced the heat unaccounted-for increases. The heat unaccounted-for actually represents the sum of four quantities, (1) experimental error, (2) radiation and convection losses, (3) potential heat of scurf, and (4) potential heat of aldehydes, &c., soluble in the liquor.

TABLE 3a.—*Heat Balance of Generator Expressed as B.Th.U. per gall. of Oil Processed.*

Test No....	3	1	7	4
Calculated temperature of mixture (°C.)	270	245	245	215
Proportion of oil evaporated by heat supplied as preheat	< 95%	80%	85%	55%
HEAT INPUT—				
Potential heat of oil	166,500			
Sensible heat of oil above 20° C.	2,650	2,650	3,070	2,650
Sensible heat of air above 20° C.	1,560	1,070	870	420
Total heat input, per gall.	170,700	170,200	170,400	169,600
HEAT OUTPUT—				
Potential heat in gas	100,300	99,900	96,500	88,000
*Potential heat in light tar	47,900	48,700	48,600	54,300
†Potential heat in heavy tar	12,600	11,800	12,300	13,000
Sensible and latent heat in products	7,600	7,400	7,200	7,700
Total heat accounted-for	168,400	167,800	164,600	163,000
Heat unaccounted-for	2,300	2,400	5,800	6,600
	%	%	%	%
EFFICIENCY—				
(*a*) Potential heat in gas / Potential heat in oil	60.3	60.0	58.0	52.8
(*b*) Potential heat in gas and tar / Potential heat in oil	96.6	96.4	94.7	93.5

* Gross calorific value of light tar = 18,000 B.Th.U. per lb.
† Gross calorific value of heavy tar = 17,550 B.Th.U. per lb.

The quantity of sensible and latent heat in the products is nearly double the preheat which is required in the reactants. If some of this heat were returned to the process by preheating the air in a heat exchanger, overall thermal efficiencies of at least 90% should be attained.

Conclusion

The process is dependent on a high-grade imported fuel, and this makes it unsuitable for general use.

It is, however, simple and flexible, and requires a very moderate labour force for its operation.

The capital cost of the plant, and the power and steam requirements of the process, are modest; and the gas, which is produced at the calorific value required for distribution, is easily purified. It is, therefore, very suitable for use at times of peak load.

At such times, the unusual combustion characteristics and the high specific gravity of the gas should not be a disadvantage.

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DISCUSSION

Dr. **D. T. A. Townend** (British Coal Utilization Research Association) said that whatever the present limitations of the application of the process in this country, there would seem no doubt that it might be of considerable value elsewhere. It was particularly pleasing to him that this application should have developed from University research work into fundamental problems. The subject was complex and Dr. Maccormac was one of his fellow-workers who devoted himself to it with unflagging zeal and keen insight. There was always a long time interval between academic discovery and its ultimate appreciation among technical men at large and industry. An interesting aspect was that the work was first undertaken in 1933 in order to elucidate the problem of "knock" in internal combustion engines, and while achieving this object, new combustion mechanisms, which were bound in time to have wider application, were brought to light. Their own immediate attention was the character of the intermediate oxygenated compounds participating, mainly aldehydes and peroxides; the organic chemistry of the subject at the time was inadequate to provide much assistance, and some of their most eminent chemists were to-day still grappling with the problem. Dr. Maccormac had applied the knowledge gained at another end of the scale of the investigation when it was demonstrated that by effecting the coalescence of a two-stage combustion mechanism, much of the hydrocarbon could be burned with air in considerable defect with the production of permanent combustible gases of calorific value shown to be suitable for use with town gas. As indicated, the process was dependent on high-grade imported fuel which should have a high content of paraffins and naphthenes. There was an inevitable production of tar and liquor, but in time this might find profitable outlet and improve economy.

Mr. **A. Bolzinger** (Assistant Manager, Research Department of Gaz de France) remarked that the development of gas utilization for domestic heating purposes in France had set up peak-load problems with the same sharpness as in Great Britain. Until now, for want of other means, peak loads were generally taken care of by the production of oil gas in the retorts or in the chambers. The G.E.I.M. apparatus had been specially designed to deal with the production of oil gas. Its simplicity was well known as it worked on similar principles to those of the Dayton process and of the one described by Dr. Maccormac. Since the steaming process had been generalized, carburetted water gas generating plants had hardly been in operation, except in big gas-works, such as Paris and Lyons. The G.E.I.M. apparatus was well thought of by many gas undertakings following the first experiments at Saint-Brieuc and Geim plants had been erected and were in the process of erection. Difficulties of various orders had arisen. The first was the scarcity of the gas oil supply in France. An attempt to solve this difficulty was made by substituting for the gas oil heavier products obtained from the distillation of uncracked raw oils. Experiments had been started at Saint-Brieuc with paraffin distillates, but these experiments were so far insufficiently complete and definite results were not yet available. The second difficulty was the specific gravity of the Geim gas and its composition, which made it unsuitable for its straight use in domestic appliances.

A theoretical and practical study of Geim gas (which would be the subject matter of a paper at the 1948 Congress of the French Gas Association) had shown that one could render this gas suitable for domestic consumption by increasing, more particularly, its hydrogen content. To do this, compressed gas rather rich in hydrogen had been brought in containers to the plants. A mixture of 20% of this gas and 80% of Geim gas was suitable for burning in domestic appliances. The last difficulty to mention when straight Geim gas was used were encountered in its detarring and purifying. The difficulty was avoided when it was mixed with raw coal gas and when it passed with the latter through the bulk purification process.

Generally speaking, it seemed that carburetted water gas would recover its important place in the French gas industry, to meet peak loads conditions, should the gas production be concentrated in coke oven plants owned by the gas industry or by the steel industry. In order to follow up the consumption, gas will have to be produced on the spot. But water gas demands good quality coke. France produced a high proportion of bituminous non-caking coals, with a high gas yield, but of no caking properties. One therefore contemplated producing gas direct from these coals in double gas producers (Strache or Tully) or in inte-

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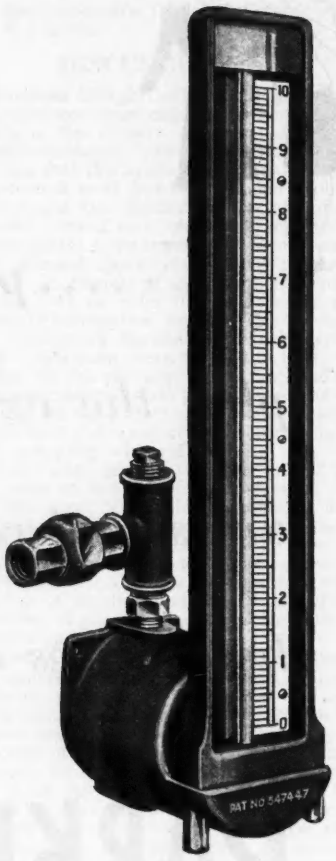
There are many places such as the retort house and exposed plant of a gas-works, or the gas-fired furnaces employed on the thousand and one uses to which gas has proved so adaptable, or the gas-fired ovens used in the confectionery trade where the extremes of temperature give rise to difficulties when using liquid pressure gauges or manometers.

The water column gauge in its two main forms, single column and double column, has proved to be most simple and efficient in use, except for the fact that in warm surroundings, it is necessary to keep a constant check on water level to recover the loss in level due to evaporation, and in cold weather, exposed gauges will freeze up. A gauge which overcomes these difficulties has now been produced by using a special liquid and scale.

This liquid will not evaporate at temperatures well above the boiling point of water neither does it freeze at temperatures below the freezing point of water, it does not absorb or deteriorate when in contact with gas and it is not chemically active on metal or glass. Its density is slightly heavier than water hence the use of a special scale.

The construction of the gauge is simple yet robust and of pleasing lines, whether standing on its base or fastened to a wall or board. Being a single column gauge it is easy to read.

In addition to the pressure reading scale, space is provided for the addition of another scale calibrated to indicate per cent. of full flow. This means that if the full flow pressure is known, then a scale can be supplied that will indicate with reasonable accuracy whether the gas control is set at ¼ or ½ or any opening between shut and full.



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gral gas producers, instead of utilizing coke in normal water gas generating plant.

This "double gas" would, if necessary, be carburetted with heavy oils. Therefore, the replacement of gas oil by heavy oils for the purpose of gas carburetting remained on the agenda.

Mr. **J. W. Hyde** (Anglo-Iranian Oil Company, Ltd.) said the petroleum industry was very interested in the use of oil by the gas industry. He took Mr. Maccormac's figures to mean the overall thermal balance of the process, but he was not sure whether he was justified in taking figures from several of the Tables and putting them together. However, he did so, and he came to the conclusion that the overall conversion of oil to gas was 46% (weight), or thereabouts. There was therefore evidence that anything that could be done to increase the total conversion of a rather expensive gas oil to a valuable product, gas, would be a good thing and he asked Dr. Maccormac whether he has had any experience of packing the reactor to suppress the general reaction, and whether he had any experience with the use of catalysts which would increase the conversion and probably prevent the formation of aldehyde. On the chemical engineering side he would be pleased if the author could tell them whether there was anything particular in the spray size and whether the size used was in any way critical.

Mr. **F. M. Birks** (Gas Light & Coke Company) remarked that when it was first considered, it was never suggested that the plant would ever run for any length of time. In the last 20 years they had probably had no more than 20 days on which the plant could be put into use. The variation between the last winter and the one before would occupy from 10% to 15% of the capacity of an undertaking. During this last winter one would not expect to use a plant of this type at all and, in the main, he himself would not visualize that the actual necessity for using it would be for more than a very short period, not more than five days consecutively. With the increase of space heating, the gas industry would have to meet very high peak loads at very long intervals. Therefore, the question of the cost of the fuel, or even the considerable amount of tar which might have some economic use was not of great significance, because the actual amount used in the course of several years would be very small indeed.

Dr. **Harold Hartley** asked the author if he could tell them what happened to the sulphur.

Dr. **Maccormac,** replying to the discussion, said that Mr. Hyde had asked some questions which he could not answer offhand. They had not tried packing the reaction vessels and he did not think it would be a good idea. He thought it would increase the hydrogen concentration in the gas and decrease the oil efficiency in therms per gallon. Catalysts would be very useful if they break up the objectionable smelling products of the cool flame, but they had not done anything with that yet. With regard to spray size, when they started these investigations they used extremely good atomization, using a high-pressure atomizer, but they came to the conclusion there was no advantage in using this if they had sufficient pre-heat. If the oil was pre-heated they got good atomization at the spray. If they had not sufficient pre-heat it was essential to get the oil on to the side reaction tube as quickly as possible to give it a chance to gain heat from the reactive gas. Mr. Hyde had also asked whether there was any possibility of using cheaper oil. The first essential was that the oil should evaporate. They had actually taken their oil tar—which represented 80% of the total power—and re-processed it. The process ran satisfactorily as long as it did run, but the tar contained a great deal of material which could not evaporate. This collected in the reaction tube, finally blocking it, and they had to operate the plant on a cycle of 40 min. make followed by about 20 min. blow, and during the blow the temperatures rose so high that the reaction tube was damaged. With regard to sulphur, mentioned by Dr. Hartley, he had been non-committal in the paper. They only accounted for 80% of the sulphur in the oil. The sulphur content of the tar, by weight, was twice as much as is in the oil.

MORE ATTRACTIVE COOKING

In Los Angeles laboratories experiments have been aimed at devising a gas range which solves ventilation problems in the kitchen. Rise in temperature and humidity, accumulation of grease and dust on wall surfaces, the smell of cooking throughout the house—these unwanted by-products of cooking are to be eliminated by a new type of ventilating hood which is part of the cooking range. The hood projects from the back wall of the cooker, but has been placed in a position not to hinder the cook in supervising her saucepans; it is also of standard design so that it can be added to standard cookers in use now. Combustion products and cooking vapours are caught in fan-operated suction slots and collected in a main vent which leads, below the floor and through the wall, to the open air. The hood is porcelain enamelled metal and provides facility to warm plates and keep food warm. It is also hoped that, if desired, the ranges equipped with hoods will supply heat to the kitchen. The electrically operated fan can be switched on and off, as needed, and consumes little current. A model range and hood aroused interest at a recent exhibition in Los Angeles, and manufacturers may follow up this development work.

Transparent mirror doors, now being fixed on some American gas ovens, enable the housewife to catch a glimpse of herself cooking and, after switching on the oven light, seeing if her dinner is done.

WELDING RESEARCH STATION

The British Welding Research Association in 1945 purchased Abington Hall, an estate near Cambridge, in order that it might be developed as a research station for the engineering work of the Association, and be complementary to the metallurgical laboratories at the headquarters in London. On May 11 the first meeting at Abington Hall of the B.W.R.A. was held. The progress made in the development of the research station was apparent, and the enjoyment of the visit was enhanced by the pleasant surroundings seen in perfect weather.

Sir William J. Larke (President), Sir Stanley V. Goodall (Chairman), and Dr. H. G. Taylor (Director of Research) received the visitors, and Dr. Taylor gave a brief account of the development of the research station, and the senior investigators gave outlines of the investigations in progress.

Dr. J. W. Roderick pointed out that the great advantage of welding as applied to structural engineering was the comparative ease with which rigid connexions could be formed.

Mr. N. Gross said that the capacity for testing pressure vessels at Abington Hall had been considerably improved. Members would see a new test pump, capable of producing 10,000 lb. per sq. in. pressure, which had been donated to the Engineering Laboratory, Cambridge, by Messrs. Fielding & Platt, and which had been made available to the British Welding Research Association and installed at Abington Hall. They would also see how the present experiments on curved tubes were carried out, the purpose of which was to compare the behaviour of welded and seamless pipe bends.

Dr. R. Weck gave a brief account of the work in progress on fatigue testing of structures. He added that at present two lines of research were being followed—one on the determination of the best method of joining angle stiffeners to ships' plating, and the other on the influence of internal stresses on fatigue strength.

INDUSTRIAL SKIN DISEASES

Dr. William David Jenkins spent the majority of the years of his professional life as the Chief Medical Officer to the South Metropolitan Gas Company. Before his death in 1945, he was engaged in writing a book upon the diagnosis and treatment of skin diseases amongst the workers of this country. The work has now been published, and *Dermatoses Among Gas and Tar Workers* reveals itself not only as a volume of great importance on this specialized subject, but as a striking proof of one man's continuity of interest and clinical study in one industry. Not content with the purely academic side of the study of dermatoses, Dr. Jenkins applied his mind to the influences of the working environment, chemical and physical, and realized that prevention was the keynote of his life's work.

The book commences with a brief description of gas manufacture, tar distillation, chemical works operation, and low temperature carbonization, with emphasis on the degree with which workmen come into contact with the materials handled. Incapacitating and non-incapacitating occupational dermatitis form the titles of the next two sections, it being shown that the incidence of these diseases is lower than might be expected. Other skin diseases are examined at considerable length, and the author finally turns to protective measures. The conclusions arrived at during the course of the book are of great interest. For example, while the incidence of acute dermatitis due to occupational causes in a large gas undertaking is low, it is no more prevalent among retort house stokers than among capstan operators in the machine shops. Tar, *per se*, is not so productive of acute dermatitis as other substances in the various ancillary processes, but the distillation of tar in various gas-works results in many lesions being attributed to gas-making which are, in fact, due to tar distillation. This, of course, results in a wrong conception of the hazard in a gas-works in which there is no tar distillation.

The production of this book is admirable and the numerous full-page illustrations have been carefully selected. It is published in Bristol by John Wright and Sons, Ltd., and in London by Simpkin Marshall (1941), Ltd.

COMPANY MEETING

ASSOCIATED GAS AND WATER UNDERTAKINGS

MR. W. H. BENNETT'S VIEWS

THE fifteenth ordinary general meeting of Associated Gas and Water Undertakings, Ltd., was held on May 26, at the May Fair Hotel, Berkeley Street, London, W., Mr. W. H. Bennett, M.Inst.Gas E. (Chairman and Managing Director), presiding.

The Secretary (Mr. C. M. Hemsley, A.S.A.A.) read the notice convening the meeting and the report of the auditors.

The following is the statement by the Chairman which had been circulated with the report and accounts for the year ended March 31, 1948, and was taken as read:—

The uppermost thought in the minds of all holders of Gas stocks to-day is, necessarily, the threatened nationalization of the industry. So much has been said in Parliament, in the daily Press and at annual meetings of gas companies that I do not propose to traverse the grounds for opposition to ownership by the State. It suffices to say that, together with the owners of gas undertakings throughout the country, your directors have consistently done all that lay in their power to obviate a change which they believe will be to the detriment of both the gas consumer and stockholder.

Nevertheless, the Bill to nationalize all gas undertakings—whether company or municipally owned—and holding companies such as ours, was introduced in Parliament last January. The Bill closely follows the pattern of the Electricity Act which passed into law last year. Compensation for holders of Gas stocks is based upon Stock Exchange transactions on certain dates in 1945, or, if no transactions took place on those dates, then by agreement or arbitration.

It has been estimated that only 3% of the various gas investments in the country are covered by the former method. Your company is one of them.

Basis of Compensation

. If a last appeal for justice is rejected by the Government, it is certain that upon the proposed basis of compensation a very serious loss of income will result to stockholders. While it is at present impossible to say what this loss will be, the following table gives the reduction of income, based upon the assumption that, as in the case of the nationalization of the electricity industry, Government stock bearing interest at the rate of 3% per annum will replace existing stocks in this company.

Description of Stock	Present Income per £100 Nominal Stock	Future Income from Substituted British Gas Stock	Loss of Income Amount	%
	£ s. d.	£ s. d.	£ s. d.	
Ordinary Stock ...	5 0 0	3 10 6	1 9 6	29
Deferred Stock ...	6 0 0	3 12 0	2 8 0	40
4½% Red. Pref. Stk. ...	4 10 0	3 4 3	1 5 9	29
4% Red. Pref. Stk. ...	4 0 0	3 1 6	18 6	23
4% Irred. Pref. Stk. ...	4 0 0	2 18 6	1 1 6	27

In the cases of our ordinary and deferred stocks, the foregoing calculations are based upon annual dividends of 5% and 6% respectively, which we paid down to March 31, 1947. If calculated upon the dividends which, as stated in the report of the directors, would have been recommended in respect of the year under review, the loss of revenue to the holders of ordinary stock would have been 36% and deferred stock 49%.

Before leaving the matter of nationalization, it should be mentioned that the electricity departments of our combined gas and electricity undertakings in Bognor, Farnham, Camberley and Guildford passed to the British Electricity Authority on April 1, although the amount of compensation to be paid therefore has not yet been agreed. In the meantime, the Electricity Board for the Southern Area has proposed that our three first-named subsidiaries should continue to manage the electricity departments under servicing agreements for a period which will probably extend to the date when nationalization of the gas industry takes effect.

Development

In agreement with the policy of the British Gas Council, which represents the gas undertakings of the country, your directors have continued and developed their plans for the integration of the undetrakings under the control despite the threat of nationalization. Schemes which had been prepared during the war for the shutting down of smaller works and the inter-connexion of distribution systems have been put in hand, but the delay in obtaining plant and materials will prevent some of these being completed before the change in ownership takes place. We shall, however, have the satisfaction of knowing that we have done everything in our power to maintain and improve a service of which we may justly be proud.

The Accounts

There are very few items in the accounts to which I think I should draw your attention.

Revenue from all sources in comparison with the previous year is up by £8,622, principally accounted for by enhanced returns from investments and loans.

Regarding expenditure, a further sum of £2,000 has been set aside as reserve for taxation The total amount now provided under this heading is more than sufficient to cover the estimated liability for income tax for the year ending March 31 next. No liability has been incurred in respect of excess profits tax on the company or the group which it controls, and it would seem that the company will not be liable to profits tax. The net profit amounting to £77,991 is a record one and exceeds that of last year by £5,214.

Balance-Sheet Figures

Turning to the balance sheet it will be seen that we have disposed of the small investment in "other companies" and we no longer hold any freehold properties. The former consisted of shares in certain companies not connected with the gas industry. They were sold at considerable profit which has been utilized in writing down investments in subsidiary undertakings.

The freehold properties included offices, showrooms and land occupied by subsidiary companies. Your directors considered that advantage would accrue to the companies concerned and to the Area Gas Boards which will eventually control them and that it would not be to the detriment of this company if such properties were conveyed at cost to the subsidiaries, and this has been done.

Reference has been made in the report of the directors to the fact that the financial position of the company warranted the distribution of dividends at the increased rates of 5½% per annum on the ordinary stock and 7% on the deferred capital. Interim dividends at one-half of those rates were paid. The results for the full year, now laid before you, justify that decision since the profits are sufficient to pay final dividends at the same rates as the interim and leave a balance to be carried forward of £39,540, which would show an increase of £3,682 over the corresponding figure last year.

Unfortunately, however, the company is precluded by the terms of the Gas Bill from declaring dividends in excess of those for the previous accounting period. The final dividends must, therefore, be limited to the rates of 2¼% on the ordinary stock and 2½% on the deferred stock, making the totals for the year 5% and 6% respectively. This will leave the sum of £44,169 to be carried forward, an increase of £8,311 over the amount brought in.

The Last Meeting

It is probable that this is the last occasion on which I shall have the honour to review the Company's activities.

The Company is in many ways unique. Unlike many of the holding companies in the industry, no firm or individual received a penny for its formation or for securing subsequent finance. No one received payment for the negotiation of control of its subsidiaries. All the directors have been engaged in the technics and administration of gas undertakings throughout the whole of their professional careers. This fact has resulted in a sympathy and understanding between the Board of this Company and the officers of our subsidiary undertakings which has done much to bring about the satisfactory position in which the Company is situated to-day. To those officers and the officials at head office I would tender our sincere gratitude for their devoted service to the individual undertakings and this Company. We know that when nationalization comes they will maintain, under the new regime, their tradition of loyalty, enterprise and public service which has been an outstanding feature of the past.

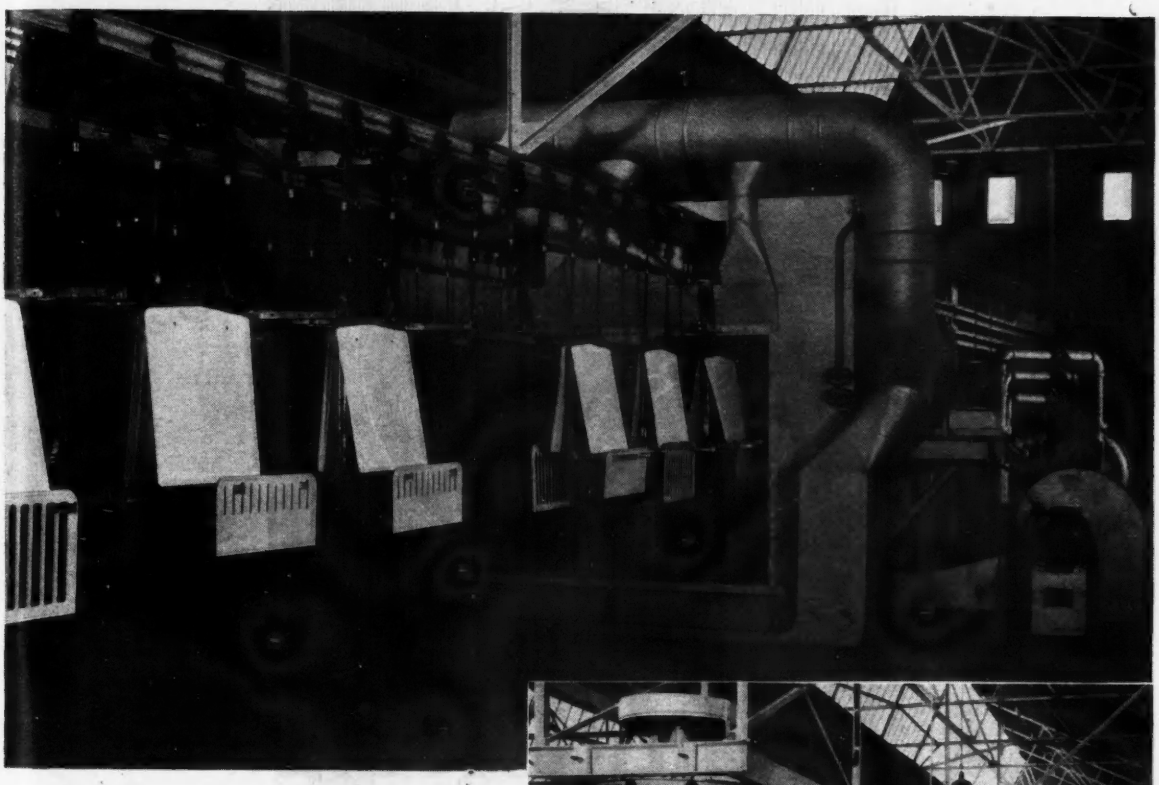
The report and accounts were unanimously adopted and the dividends as recommended were approved.

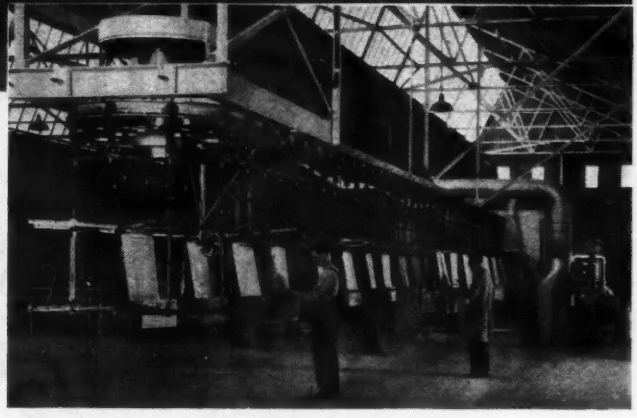
The retiring director, Mr. John Urquhart, M.Inst.Gas E., was re-elected; and the auditors, Messrs. Peat, Marwick, Mitchell & Company, having been reappointed, the proceedings terminated.

Glasgow Corporation has placed an order with the Woodall Duckham Company, Ltd., for materials required for the repair of two vertical retort benches at each of the Provan, Dawsholm, and Dalmarnock works. Delivery is expected in 1950.

BEHIND THE SCENES

IN THE MANUFACTURE OF MODERN GAS APPLIANCES





Enamelling . . . final stage

After thoroughly drying (in low-temperature ovens) the enamel sprayed on them, the various cooker components are ready for the final stage in the enamelling process. It is an operation during which the different parts are subjected to a glowing heat with the result that the carefully applied enamel coating is converted by fusion until it has a glass-like surface which will be at once hard-wearing and easy to clean. Illustrated here is a continuous gas-fired enamelling "muffle" which was installed in one of the MAIN factories before the war. The first of its type in Europe, it has an overall length of 120 feet and uses approximately 8,000 cubic feet of gas per hour. Under carefully controlled conditions, a continuous flow of enamelled parts passes on an overhead conveyor through the enamelling furnace, where the maximum temperature of 900° may be graded down to as low as 780°, according to whether the parts are sheet steel pressings or castings.

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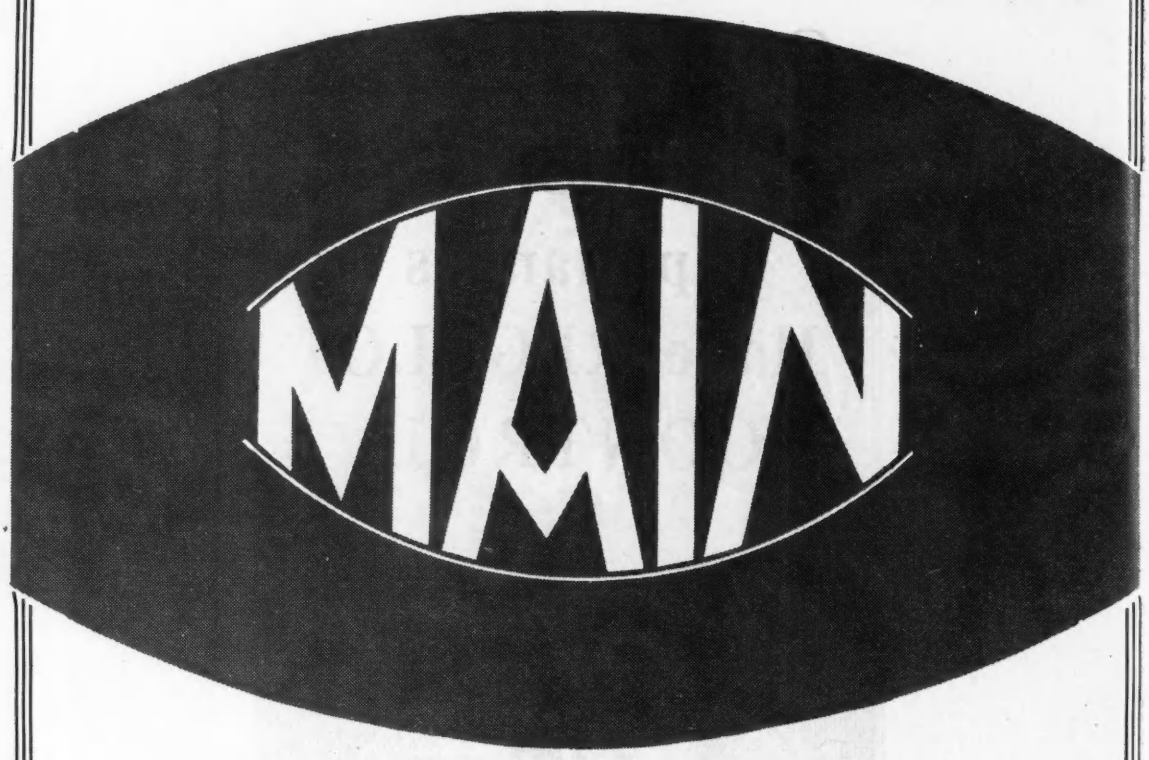

WATER HEATER

for every domestic purpose

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For a complete Household Service: M.I. MULTI-POINT Instantaneous; THERMAIN No. 15 Storage; G.L.C. CIRCULATOR

MAIN WATER HEATERS LTD., GOTHIC WORKS, THORNTON RD., CROYDON

GAS STOCKS AND SHARES

Last week's stock markets opened with uncertainty, largely owing to international political considerations, although Monday's dealings at 10,363 were the highest for some time. British Government securities fluctuated under the influence of the Palestine situation, but showed very little change on the week. Price movements in the industrial market were again generally small, with a net average decrease on the week of 0.2 points. Imperial Chemical Industries, Ltd., announced on Thursday a proposal to issue one new Ordinary share of £1 for each existing £5 of Ordinary stock held by Ordinary stockholders. Present issued Ordinary capital is £50,465,116, so that the new issue will have a nominal total of at least £10,093,025.

There was again an increased turnover in gas stocks, the total for the five days being 371, compared with 263 for the four working days of the previous week. Alliance and Dublin Consolidated Ordinary showed a rise of 9d. at 23s., but there were very few other price changes in the gas section.

The week's rises and falls were as follows:

OFFICIAL LIST

Alliance & Dublin, cons. ord.	22/6 — 23/6	+	9d.
Associated Gas & Water, ord.	22/3 — 23/3	—	3d.
do. deferred	22/6 — 23/6	—	6d.
do. 4½ p.c. Red. Cum. Pref.	20/- — 21/-	+	6d.
do. 4 p.c. Red. Cum. Pref.	19/- — 20/-	—	6d.
do. 4 p.c. Irred. Cum. Pref.	18/- — 19/-	—	6d.
Brighton, &c., 6 p.c. Std. Cons.	110 — 115	+	2
Croydon, 5 p.c. Perp. Deb.	119 — 124	+	2
Gas Light & Coke, 3 p.c. Cons.	85 — 90	+	1
Montevideo, ord. (xd. May 19)	123 — 128	+	3
Portsm'th & Gosport, 5 p.c. Max.	102 — 107	+	2

Quotations on the London Stock Exchange

When last ex-Dividend	Dividends Interest.% Last Yr.	Prev. Yr.	NAME.	Quotations May 27
Feb. 25	4	4	Alliance & Dublin Cons. Ord.	22/6—23/6
Apr. 28	5	5	Asscd. Gas & Water U'd'tgs Ord.	22/3—23/3
"	6	6	Do. Deferred	22/6—23/6
Mar. " 10	4½	4½	Do. 4½ p.c. Red. Cum. Pref....	20/ —21/
"	4	4	Do. 4 p.c. Red. Cum. Pref. ...	19/ —20/
"	4	4	Do. 4 p.c. Irred. Cum. Pref....	18/ —19/
Feb. " 11	7	7	Barnet Ord. 7 p.c. max.	153—158
Feb 25	5	5	Bath Cons. Ord. 5 p.c. basic ...	103—108
Sept. 17	6½	10	Bombay, Ltd., Stock	46/- -49/-
Mar. 10	8½	8½	Bournemouth Std. 5 p.c. sliding scale ...	163—168
"	7	7	Do. 7 p.c. max. div.	153—158
"	4	4	Do. 4 p.c. Pref.	96—101
"	6	6	Do. 6 p.c. Pref.	123—128
Feb. " 11	3½	3½	Do. 3½ p.c. Red. Deb.	97—102
Dec 10	4	4	Do. Perp. 4 p.c. Deb.	98—103
Feb. 25	5·35	5·35	Brighton, &c., 5 p.c. Std. Cons. ...	102—107
	6·3	6·3	Do. 6 p.c. Std. Cons.	110—115
Dec. " 10	5	5	Do. 5 p.c. Perp. Deb.	117—122
Feb. 25	5	5	Bristol, Gen. Cap. 5 p.c. max.	112—117
Dec. 10	4	4	Do. 4 p.c. New Deb. Red.	95—100
Mar. 10	7½	7½	Brit. Gas Light Ord.	127—132
Dec. 31	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	108—113
Dec. 10	4	4	Do. 4 p.c. Red. Deb.	92— 97
Feb. 11	10	10	Cambridge U. & T. Orig. 10 p.c. Cons. ...	190—200
"	5	5	Do. 5 p.c. Cons. 'C'	95—100
"	7	7	Do. 7 p.c. Cons. 'B'	135—140
Apr. " 14	4½	4½	Cape Town, Ltd., 4½ p.c. Cu. Pf.	16/6—18/6
Feb. 11	6½	6½	Cardiff Con. Ord.	119—124
Mar. 10	5	5	Cheltenham, 5 p.c. basic Cons. Ord. ...	100—105
Dec. 10	4	4	Do. 4 p.c. Perp. Deb.	93— 98
Feb. 11	5½	5½	Chester United Ord.	106—111
Oct. 29	—	7	Colombo Ltd., Ord.	27/6—32/6
	—	7	Do. 7 p.c. Pref.	22/6—24/6
Mar. " 31	5	5	Colonial Gas Assn. Ltd. Ord.	16/ —18/
	—	8	Do. 8 p.c. Pref....	23/6—25/6
Jan. " 28	5	5	Commercial Ord.	87— 92
Dec. 10	3	3	Do. 3 p.c. Deb. Perp....	72— 77
Feb 11	5	5	Do. 5 p.c. Irred. Deb....	107—112
"	6	6	Croydon sliding scale	119—124
"	5	5	Do. max. div.	102—107
"	4	4	Do. 4 p.c. Irred. Pref.	95—100
Dec. " 31	4	4	Do. 4 p.c. Perp. Deb....	95—100
	5	5	Do. 5 p.c. Perp. Deb....	119—124
Feb. " 11	8	8½	Derby Cons. Ord.	133—138
Dec. 10	4	4	Do. 4 p.c. Red. Deb.	93— 98
Feb. 11	5	5	East Hull Ord.	92— 97
"	5	5	East Surrey 'B,' 5 p.c.	98—103
	6	6	Do. 6 p.c. Cum. Pref....	117—122
Dec. " 31	5	5	Do. 5 p.c. Irred. Deb.	118—123
Mar. 1	6½	6½	East Wight Cons. Ord.	108—113
Mar. 10	5	5	Eastbourne 'A'	97—102
	3½	3½	Do. 'B'	94— 99
Nov. " 12	5	5	Gas Consolidation Ord. 'A'	21/ —23/
"	5	5	Do. Ord. 'B'	21/ —23/
May " 19	4	4	Do. 4 p.c. Red. Cum. Pref.	17/6—19/6xd
Feb. 11	5	5	Gas Light & Coke Ord.	22/6—23/6
"	3½	3½	Do. 3½ p.c. max.	77— 82
"	4	4	Do. 4 p.c. Con. Pref.	97—102
Dec. " 31	3½	3½	Do. 3½ p.c. Red. Pref....	96—101
Nov. 26	3	3	Do. 3 p.c. Con. Deb.	85— 90
"	5	5	Do. 5 p.c. Deb.	102—107
"	4½	4½	Do. 4½ p.c. Red. Deb.	102—107
Mar. " 10	3½	3½	Do. 3½ p.c. Red. Deb....	93— 98
"	5	5	Gloucester Cons. Ord.	94— 99
Feb. " 11	4	2	Great Yarmouth (8½ p.c. max)	13 — 14
Feb. 25	7½	7½	Guildford Cons. Ord.	132—137
"	5	5	Hampton C't, 5 p.c. Cons. Ord.	95—100
"	5	5	Hartlepool G. & W. 5 p.c. Ord.	92— 97
May " 19	6	6	Hastings & St. L. (5 p.c. Std.)	97—102xd
"	5	5	Do. (3½ p.c. Std.)	82— 87xd
June " 18	8½	8½	Holyhead & N. Wales Ord.	20/—22/6
Mar. 10	5	5	Hornsey 3½ p.c. Std.	89— 94
"	6⅞	6⅞	Do. 5 p.c. Std	110—115
May " 19	8¾	8½	Imperial Continental Cap.	122—127xd
Jan. 28	3½	3½	Do. 3½ p.c. Red. Deb....	95—100
Mar. 31	7½	7½	Lea Bridge Co., Cons. Ord....	132—137
Feb. 11	5½	5½	Liverpool 5 p.c. Ord.	120—125
Mar. 10	7½	7½	Luton Cons. Ord. 'A'	148—153
"	6½	6½	Do. Ord. 'B'	115—120

When last ex-Dividend	Dividends Interest.% Last Yr.	Pref. Yr.	NAME.	Quotations May 27
Jan. 14	7	7	Malta & Med'n., 7 p.c. 1st Pref.	100—110
"	7½	7½	Do. 7½ p.c. 2nd. Pref....	105—115
Feb. 25	5 5/20	5 5/20	M.S. Utility 'A' Cons.	100—105
"	3 3/20	3 3/20	Do. 'B' Cons.	68— 73
"	5	5	Do. 'C' Cons.	102—107
"	4	4	Do. 4 p.c. Cons. Pref.	96—101
May 19	2	4	Montevideo, Ltd. Ord.	123—128xd
Feb. 11	5½	5½	Newcastle and Gateshead Ord.	24/9—25/9
Dec. 31	3½	3½	Do. 3½ p.c. Perp. Deb.	93— 98
Mar. 10	7	7	Newport (Mon.) Cons.	93— 98
Mar. 31	6½	6⅝	Do. 5 p.c. Perp. Deb....	112—117
"	5	5	North Middlesex 6 p.c.	122—127
"	5	5	Do. 5 p.c. Pref.	105—110
"	5	5	Northampton Cons.	103—108
Feb. " 11	5	5	Oxford, Cons. Ord.	200—210
Dec. " 10	5⅛	5⅛	Plymouth & Ston.houseOrd.	108—113
"	8½	8½	Do. Addl.	13½— 14½
"	7¾	7¾	Do. New	12⅝— 13⅝
Mar. 10	5	5	Do. 5 p.c. Deb. Perp....	118—123
Feb. 11	7½	7½	Portsmouth & Gosport Cons.	145—150
"	5	5	Do. 5 p.c. max.	102—107
"	10	10	Preston 'A'	177—182
"	7	7	Do. 'B'	125—130
June 24	46 2	4	Primitiva Holdings, Ltd. Ord.	13/ —15/-
Dec. 10	6	6	Do. 6½ p.c. Red. Cum. Pref.	100—105
Feb. 11	5	5	Reading, 5 p.c. max.	97—102
Feb. 11	—	4	Do. 3½ p.c. Red. (Non-Cum.) Pref....	94— 99
Dec. 10	—	—	Do. 4 p.c. Perp. Deb....	92— 97
Feb. 11	5	5	Romford, Ord.	110—115
Mar. 31	4	4	Do. 4 p.c. Debs. Red....	95—100
Sept. 17	—	7½	Severn Val. Ltd. Ord.	22/6—23/6
Feb. 25	4½	4½	Do. 4½ p.c. Cum. Pref.	20/6—21/6
Feb. 25	6½	6½	Sheffield Cons....	142—147
Dec. 31	4	4	Do. 4 p.c. Red. Deb.	94— 99
Sept. 3	—	6	South East'n Gas Ltd. Ord.	22/ —23/
Mar. 10	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	20/9—21/9
	4	4	Do. 4 p.c. Irred. Cum. Pref.	19/—20/-
Feb. " 11	5	5	South Metropolitan Ord.	95 — 98
"	6	6	Do. 6 p.c. Irred. Pref....	122 —127
"	4	4	Do. 4 p.c. Irred. Pref.	96 — 99
Dec. 31	3	3	Do. 3 p.c. Perp. Deb.	82 — 87
Jan. 14	5	5	Do. 5 p.c. Red. Deb.	98 —103
Jan. 28	5	5	South Suburban Ord. 5 p.c.	112 —117
"	5	5	Do. 5 p.c. Perp. Pref.	108 —113
"	4	4	Do. 4 p.c. Perp. Pref....	94 — 99
"	3½	3½	Do. 3½ p.c. Red. Pref....	90 — 95
Dec. 10	5	5	Do. 5 p.c. Perp. Deb....	118 —123
Apr. 28	5½	5½	South West. G. & W. Ltd. Ord.	19/—21/-
Feb. 11	5	5	Southampton Ord.	101 —106
Jan. 28	6	6	Sunderland Ord.	113 —118
Feb. 11	4½	4½	Swansea Ord.	82 — 87
	5½	5½	Do. 5½ p.c. Red. Pref.	100 —105
Mar. 10	7	7	Swindon Cons. Ord.	114 —119
"	5	5	Tottenham Ord.	115 —120
"	5	5	Do. 5 p.c. Pref.	108 —113
"	5½	5½	Do. 5½ p.c. Irred. Pref.	119 —124
"	4	4	Do. 4 p.c. Perp. Deb....	97 —102
Dec. 10	4	4	Tunbridge Wells, 4 p.c. Sliding	122 —127xd
May 19	6.85	7½	U. Kingdom Ltd. Ord.	23/ —24/
Nov. 12	—	7	Do. 4½ p.c. 1st Cum. Pref.	22/—23/xd
May 19	4½	4½	Do. 4 p.c. 1st Red.Cum.Pref.... ...	19/ —20/xd
"	4	4	Do. 4½ p.c. 2nd Non.Cum.Pf.... ...	19/3—20/3
Dec. 10	4½	4½	Do. 3½ p.c. Red. Deb....	93 — 98
Mar. 10	3¼	3¼	Uxbridge, &c., 5 p.c.Cap.	119 —124
May 19	6⅝	6⅝	Do. 5 p.c. Pref.	107 —112xd
"	5	5	Do. 5 p.c. Perp. Deb.	117 —122
Nov. 26	5	5	Wandsworth Cons.	117 —122
Feb. 11	5	5	Do. 4 p.c. Pref....	97 —102
"	4	4	Do. 5 p.c. Irred. Deb....	121 —126
Dec. 10	5	5	Do. 4 p.c. Irred. Deb....	95 —100
"	4	4	Watford & St. Albans Ord.	116 —121
Jan. 28	5	5	Do. 5 p.c. Pref.	106 —111
"	5	5	Do. 5½ p.c. Pref.	120 —125
"	5½	5½	Weymouth Ord. (5 p.c. Basic)	92 — 97
Feb. 11	5	5	Woking District "A" Ord....	182 —192
"	10½	11	Do. "B" Ord....	128 —133
"	7.35	7·7	Wolverhampton Cons. Ord.	119 —124
"	7½	8	York Cons. Ord.	97 —102
Mar. 31	5	5		

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IMPERIAL CONTINENTAL GAS ASSOCIATION

Details of the operations of companies in which the Association is interested are included in the annual report of the Imperial Continental Gas Association, whose financial results have already been reported. The consumption of gas in 1947 in the Antwerp area of supply showed an increase of 1.34%. The number of consumers increased by 5,029, and new mains were laid to the extent of 8.3 miles. Capital expenditure of Frs. 32,214,506 was incurred during the year.

In the Brussels area re-equipment was continued of the gas and electricity networks in the Electrogaz area of supply which it had not been possible to maintain fully during the war. Work in progress in the area in which Provinciale supplies gas includes the erection of two new gasholders, one of 3,500,000 cu. ft. capacity at Woluwe-Saint-Lambert, and one of 1,750,000 cu.ft. capacity at Louvain. A gas network was installed in 1947 in the Communes of Court-Saint-Etienne and Ceroux-Mousty (south-east of Brussels) which had become affiliated to the Intercommunale Company for gas distribution in the Provinciale area (Sobragaz). At Zaventem (north-east of Brussels) the conversion of the electricity network to alternating current continues.

Work carried out during the year by the Societé de Distribution du Gaz (Distrigaz) included the erection of a new workshop, garage, and stores. The gas transported by Distrigaz represents nearly half of the total consumption in Belgium.

During the year 526,983 tons of coal were carbonized by Les Cokeries du Brabant at the rate of about 1,450 tons of coal per diem. The end of the year was marked by a further increase in the price of coal and an almost proportionate increase in the price of coke. Prices of the other by-products remained unchanged. The programme of re-equipment on the Pont Brule Works was continued. A part of the new battery of five gas producers was put into action. The erection of the new battery of 39 coke ovens is nearing completion and it is expected that it will be put into service during 1948.

The Société Chimique de Selzaete took advantage of an exceptionally favourable trading year to set aside Frs. 4,750,000 for future developments in addition to the normal depreciation quota of Frs. 4,453,112.

Regarding Matériel et Appareillage pour le Gaz, l'Electricité et le Coke the report says that during 1947 supplies became progressively easier to obtain from the manufacturers and enabled a satisfactory turnover to be maintained, but the results for the year were influenced unfavourably by legislation imposing a reduction in selling prices of from 5 to 10% according to the nature of the apparatus. Consequently, after providing Frs. 912,000 for depreciation, the margin of profit was negligible. The Company now has two branches in Brussels, two in Antwerp, and others at Bruges, Charleroi, Eecloo, Ghent, Knocke, and Louvain.

For the year ended April 30, 1947, the results of the Compagnie Nationale d'Eclairage suffered from a rise in costs which was not offset by increased sale prices. The profit amounted to Frs. 1,962,552. After the allocation of Frs. 1,664,438 to depreciation and contingencies reserve the balance was set aside as a provision for taxation.

For the year to Mar. 31, 1948, the Compagnie Belge et Continentale de Gaz et d'Electricité paid the same dividend as for the previous year, viz., Frs. 25 per share, absorbing Frs. 10,000,000, after strengthening its reserves by Frs. 20,060,636. Belcomin, which was formed during 1947 for the better conservation of certain assets previously owned by Contibel, made a profit of Frs. 1,274,903, which was placed to reserve.

COMPANY NEWS

Meters, Ltd.—In his statement circulated with the report and accounts, the Chairman, Mr. Joseph Morley, says a net profit of £26,260 compares with a figure of £18,733 last year. The increased profit on the year's working of £7,526 is due in part to a satisfactory increase in turnover but also to the Board's policy of keeping prices at the lowest possible level backed by a continuous drive to reduce costs through increased efficiency. Investments in subsidiary companies stand at £96,249, an increase of £8,949 over last year, representing the cost of the acquisition of the small gas meter making unit in the London area. The requirements of the home market have been curtailed by the restriction in the building programme and, again, there has been some disturbance to normal requirements with the changeover of the supply industry to State ownership. Against this the Company has achieved some success in the export markets and its contribution in this direction has been appreciable. The parent Company has guaranteed banking facilities in respect of the subsidiary to the tune of £30,000 and this arises because of the needs of additional financing for such export trade. "Finally," Mr. Morley concludes, "you will expect me to say something about the current outlook, and I must say the picture is far from clear. I will say this, however, notwithstanding the difficulties and uncertainty created by impending nationalization your Company is in good trim, and we face the future with quiet confidence."

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Extract from the review appearing in "GAS JOURNAL," April 21, 1948

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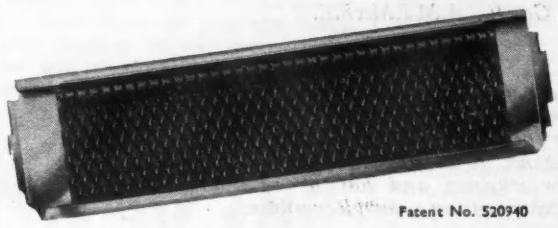

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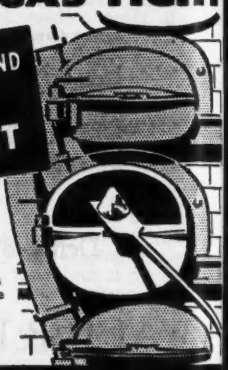

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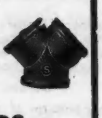

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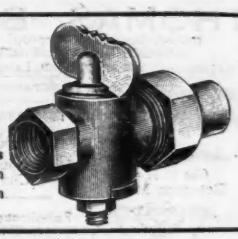
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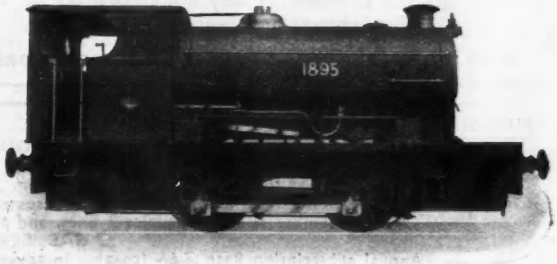

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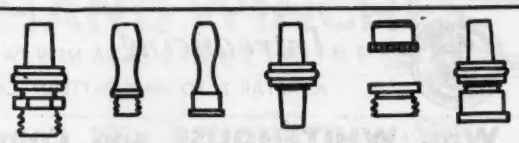

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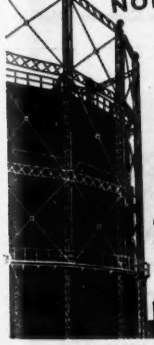

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K. LESLIE MORTIMORE,
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Gas-works,
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APPOINTMENTS VACANT

None of the vacancies in these columns relates to a man between the ages of 18 and 50, inclusive, or a woman between the ages of 18 and 40, inclusive, unless he or she is excepted from the provisions of the Control of Engagement Order, 1947, or the vacancy is for employment excepted from the provisions of that Order.

REPRESENTATIVES required already calling on Gas Undertakings to represent a firm with new Gas Appliances already introduced. Areas required: London; Midlands; South West; West; and North of England. Car is essential. To represent on commission basis. Reply to No. 9732, "GAS JOURNAL," 11, Bolt Court, Fleet Street, London, E.C.4.

GAS-WORKS CHEMIST.

QUALIFIED CHEMIST required. Must have good experience in the control of gas-works, including vertical retorts, and C.W.G. plant. Salary £450 per annum. Superannuation scheme in operation. Full details of training, experience and qualifications to be sent to W. MACNAUGHTON, Chief Engineer, Wolverhampton Gas Company, Darlington, Street, Wolverhampton.

TOTTENHAM AND DISTRICT GAS COMPANY

APPLICATIONS are invited for the position of SHIFT CARBONIZING FOREMAN at the Ponders End Works of the above Company. Candidates should preferably have had experience on W.D. I.V.C., although this is not absolutely essential, but a mechanical training will be an advantage. The rate of pay will be according to experience.

Applications, giving full particulars of qualifications and experience, should be sent to the PERSONNEL OFFICER, Tottenham and District Gas Company, Woodall House, 658, Lordship Lane, Wood Green, N.22.

EXETER GASLIGHT AND COKE COMPANY

APPLICATIONS are invited from qualified persons for the position of HOME SERVICE ADVISER AND COOKERY DEMONSTRATOR.

Salary up to £400 per annum is offered dependent upon experience and qualifications. Applications, giving details of education, qualifications and experience, and accompanied by two recent Testimonials, should be addressed to the undersigned, to arrive not later than July 1, 1948.

H. H. BROWN,
Engineer and General Manager.

Exeter Gaslight and Coke Company,
11-13, Southernhay East,
Exeter.

BURGH OF JOHNSTONE

(GAS DEPARTMENT.)

APPLICATIONS are invited for the position of DEPUTY ENGINEER AND MANAGER. Experience of vertical retorts and C.W.G. plant essential. Salary on J.I.C. Scale Technical Grade IV, viz., £420–£465, plus war bonus presently £60 per annum. Applicants must not be more than 45 years of age and the successful applicant will be required to pass the necessary medical examination for admission to the Town Council's superannuation scheme.

Applications, marked "Deputy Engineer and Manager" and stating age, qualifications and experience, should be lodged with *copies* of recent Testimonials with the undersigned on or before Saturday, June 12, 1948.

RODERICK S. MACRAE,
Town Clerk.

Town Clerk's Office,
Town Hall,
Church Street,
Johnstone.
May, 1948.

(Classified advertisements continued on Supplement 6)

APPOINTMENTS VACANT (ctd.)

HORNSEA GAS LIGHT AND COKE COMPANY, LIMITED

HORNSEA, EAST YORKS.
(Constituent Company of the United Kingdom Gas Corporation, Ltd.)

RESIDENT MANAGER.

APPLICATIONS are invited for the position of RESIDENT MANAGER for the above undertaking at a commencing salary of £450 per annum, and a free house, with coal and gas is available.

The carbonizing plant consists of four beds of horizontal retorts with Morris manual charger, and the annual output is approximately 40 million cu.ft. The administration of the undertaking is under the supervision of the management of Bridlington Gas Company.

Candidates must be experienced in the control of similar plant and in general administrative duties.

Applications, stating age, experience and present position, with *copies* of three recent Testimonials, to be in my hands not later than Saturday, June 12, 1948.

F. S. HUNTER.

Bridlington Gas Company,
Quay Road,
Bridlington.
May 19, 1948.

DERBY GAS LIGHT AND COKE COMPANY

INDUSTRIAL GAS ENGINEER.

APPLICATIONS are invited for the position of INDUSTRIAL GAS ENGINEER. Applicants must be of good education and address and be familiar with the general application of heat in industrial processes, be able to design burner equipment and general layouts for non-standard gas applications, and capable of preparing working drawings. Selling experience and ability to recognize potential industrial gas development is essential.

The successful applicant will be required to take charge of the Company's Industrial Furnace Workshops and Production in Heat Treatment Shops. A knowledge of modern alloy steel specifications would be an advantage.

The applicant should hold the Higher Certificate in Gas Engineering (Supply) of the Institution of Gas Engineers or have equivalent combustion engineering qualifications, and should have a sound practical training in either metallurgy or mechanical engineering.

Salary would not be less than £700 per annum.

Applications, stating age, qualifications and experience, together with the names of three persons from whom references can be obtained, should be addressed to the undersigned to arrive not later than June 21, 1948.

C. H. MOSEDALE,
Secretary.
Friar Gate,
Derby.

CITY OF COVENTRY GAS UNDERTAKING

STORES CONTROLLER.

APPLICATIONS are invited from suitably qualified persons for the position of STORES CONTROLLER. Applicants must be experienced in modern methods of stores organization and control, including purchasing routine, handling of suppliers' invoices and maintenance of stores accounts, &c. A knowledge of canteen organization and administration, although not essential, would be an advantage. The successful applicant will be responsible to the Commercial Manager for the operation of the Stores Control Section.

Candidates should have passed the Intermediate Examination of the Institute of Cost and Works Accountants, or hold an equivalent qualification.

The salary will be in accordance with A.P.T. Division, Grade II, commencing at £420, rising, subject to satisfactory service, to £465 per annum.

The successful applicant will be required to pass a medical examination and to contribute to the Corporation superannuation scheme. He will also be required to contribute to the Staff Widows' and Orphans' Pension Scheme. The appointment will be subject to three months' notice on either side.

Applications, stating age, experience, qualifications, &c., together with *copies* of two recent Testimonials, should be addressed to the undersigned so as to be received not later than Saturday, June 19, 1948.

JOHN E. WAKEFORD,
Engineer and Manager.
Gas Department,
Gas Street, Coventry.
May 25, 1948.

TOTTENHAM AND DISTRICT GAS COMPANY

APPLICATIONS are invited for the position of SHIFT SUPERINTENDENT at the Willoughby Lane Works of the above Company. Candidates should preferably have had experience on Woodall-Duckham, I.V.C.'s, C.V.'s, and carburetted water gas plant. The salary will be according to experience but not less than £450 per annum. Applications, giving full particulars of qualifications and experience, should be sent to the PERSONNEL OFFICER, Tottenham and District Gas Company, Woodall House, 658, Lordship Lane, Wood Green, N.22.

CITY OF LEEDS

(GAS DEPARTMENT.)

NEW WORTLEY GAS-WORKS.
APPOINTMENT OF RELIEF SUPERVISING SHIFT FOREMAN.

APPLICATIONS are invited for the position of RELIEF SUPERVISING SHIFT FOREMAN at the above works.

Applicants should be under 45 years of age, and possess initiative and technical ability. Sound practical experience in the operation and control of gas producing plant and the control and organization of labour is essential. Experience of horizontal retorts and carburetted water gas plant is desirable.

The wage on appointment will be at the rate of £7 15s. per week for six shifts worked, and will increase by two annual increments of 5s. per week to a maximum of £8 5s. per week.

The appointment will be subject to the Local Government Superannuation Act, 1937, and the successful candidate will be required to pass a medical examination.

Applications, stating age, qualifications and experience, addressed to the undersigned, must be delivered not later than Tuesday, June 22, 1948.

Canvassing in any form, either directly or indirectly, will be a disqualification.

C. S. SHAPLEY,
Engineer, and General Manager.
Gas Offices, Market Hall
Leeds, 2.
May, 1948.

COUNTY BOROUGH OF ROCHDALE

(GAS DEPARTMENT.)

APPOINTMENT OF CLERK OF WORKS.

APPLICATIONS are invited from qualified engineers for the position of CLERK OF WORKS. The post is not on the regular establishment of the Department and is a temporary one, but the services of the official are likely to be required for at least three years, and probably longer.

The salary to be paid will range from £500 per annum to £750 per annum, according to the qualifications of the candidate selected for the post.

The duties will include the supervision of all contracts for the installation of new gas-works plant. The Corporation is at present completely reconstructing its Gas-works, and the work includes new and reconstructed carbonizing plant up to an ultimate capacity of approximately 8 million cu.ft. per day together with all associated coal and coke handling plant, new screening plant, waste-heat boiler plant, new purifiers, railway sidings, gasholder, condensers, and other ancillary plant. Contracts have already been let for a large portion of this work.

Preference will be given to candidates having considerable experience and training in the design, construction, and erection of gas-works plant, and holding one or more of the following qualifications: Chartered Gas Engineer, Chartered Civil Engineer, Chartered Structural Engineer, or a degree in engineering.

The appointment is subject to the provisions of the Local Government Superannuation Act, 1937.

Canvassing, directly or indirectly, will be a disqualification. Candidates must disclose whether or their knowledge they are related to any member to senior official of the Council.

Applications, stating age, qualifications, training and experience, together with the names of two persons to whom reference can be made, endorsed "Clerk of Works" and addressed to the Engineer and Manager, Gas-works, Dane Street, Rochdale, should be forwarded to be received not later than Saturday, June 12, 1948.

G. F. SIMMONDS,
Town Clerk.
Town Hall,
Rochdale.
May 15, 1948.

THE BOURNEMOUTH GAS AND WATER COMPANY

TECHNICAL ASSISTANT (DISTRIBUTION).

APPLICATIONS are invited for the position of TECHNICAL ASSISTANT in the Distribution Department. Applicants must possess the Higher Grade Certificate of the Institution of Gas Engineers, in Gas Engineering (Supply) and should have experience in the distribution of gas by high, medium and low pressures, including a knowledge of compressing machinery and equipment. They must also be well versed in main and service laying carcassing and installation work.

The commencing salary will be £10 per week.

Applications, addressed to the Engineer and General Manager, stating age, qualifications and experience, and accompanied by three recent Testimonials, must be received at the Gas Offices, 136, Old Christchurch Road, not later than Monday, June 28, 1948.

JOHN T. HAYNES,
Engineer and General Manager.
136, Old Christchurch Road,
Bournemouth

CITY OF MANCHESTER

(GAS DEPARTMENT.)

APPOINTMENT OF TECHNICAL ASSISTANT, BRADFORD ROAD WORKS.

APPLICATIONS are invited for the above position at a salary in accordance with A.P.T. Division, Grade I, of the National Scales, minimum £390, maximum £435 (consolidated).

Candidates should have sound practical experience in the control and operation of carbonizing and ancillary plants.

The appointment is subject to the provisions of the Manchester Corporation (Superannuation) Acts, 1920-1946, and the successful candidate will be required to pass a medical examination.

Applications, stating age, present position, qualifications, full details of training and experience, together with *copies* of not more than two recent Testimonials, endorsed "Technical Assistant," should be forwarded to the Commercial Manager and Secretary, Gas Department, Town Hall, Manchester, 2, so as to be received not later than Monday, June 7, 1948.

PHILIP B. DINGLE,
Town Clerk.

CRADLEY HEATH GAS COMPANY

ASSISTANT SECRETARY.

THE above Company invites applications from suitably qualified persons with secretarial and accountancy experience, preferably not more than 40 years of age. The initial salary will be according to qualifications and experience and will not be less than £600 per annum.

Apply, stating age, full details of experience, qualifications, present position, and salary required, to CRADLEY HEATH GAS COMPANY, Cradley Heath, Staffs.

This notice is in accordance with the terms of the Exemption Certificate from the Control of Engagement Order issued to the Gas Industry by the Ministry of Labour and National Service.

THE LIVERPOOL GAS COMPANY

HOME SERVICE ADVISER AND COOKERY DEMONSTRATOR.

APPLICATIONS for the above position are invited from those holding Domestic Science Diplomas or similar qualifications. The salary will be within the range of £240 to £450 per annum according to age and experience.

The successful applicant will be required to pass the usual pre-employment medical examination and, if below the age of 45, to contribute to the officials' superannuation fund.

Applications, accompanied by *copies* of not more than three recent Testimonials, should be addressed to the PERSONNEL SUPERINTENDENT, 18-26, Bold Street, Liverpool, 1.
May 21, 1948.

The above position is outside the Control of Engagements Order.

Get in on the Under Belly of RUST (Engineers' Enemy No.1)
Years of Wear instead of Weeks
GRANT & WEST LTD
'PHONE NORTH 2160
Steel Wires, Ropes & Cables running in and out of Water, Gas, Sulphurous Fumes etc. will never RUST if treated with
ROPRES
IT KILLS RUST
STAYS on every STRAND.
RUST KILLS ROPES — but ROPRES rope preservative KILLS RUST. Use ROPRES
Try a Tin on our Guarantee
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'GRAMS "SELEKJOINA, HOLWAY, LONDON"

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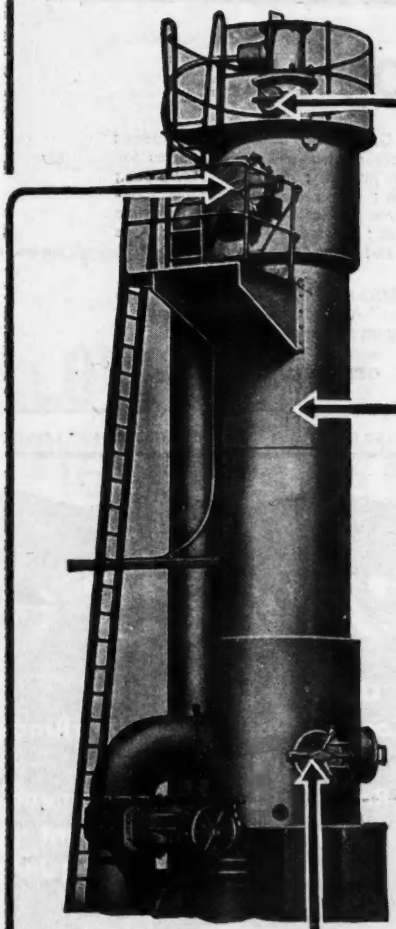

Quick opening manholes for ease of inspection (Figs. 1 and 6) fitted with Castell interlocking system (Figs. 3 and 5) ensuring that the manholes cannot be opened until the electrical supply is cut off.

FIG. 1

The patented concentric ring electrodes (Fig. 2) form the ideal construction for electrical detarrers. An exclusive feature in Holmes-Elex design.

FIG. 2

FIG. 3

Completely "Self-Screened" electrical equipment with combined control panel (Fig. 4) ensures absolute protection and prevents interference with radio reception.

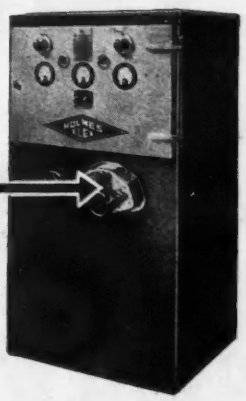

FIG. 4

FIG. 5

FIG. 6

W. C. HOLMES & CO. LTD. HUDDERSFIELD LONDON BIRMINGHAM

C 272

If it's industrial heating it can be done better with gas if—

"Keith-Blackman"
INDUSTRIAL GAS HEATING EQUIPMENT

is employed.

"KEITH-BLACKMAN" Industrial Gas Heating Equipment includes : High and Low Pressure Gas Injectors, Burners and Nozzles for almost every industrial heating process ; Brazing Blowpipes ; Soldering Irons; Soldering Stoves ; Air and Gas Mixture Controllers ; Thermostat Temperature Controllers ; Back-pressure Valves ; Meter Protection Valves ; Pressure Governors ; Gas Compressors ; Air Compressors, and Safety Shut-off Valves.

The Illustration shows 7 "Keith-Blackman" Air and Gas Mixture Controllers and a "Keith-Blackman" Air Blast Fan, part of industrial heating equipment applied to gum running furnaces.

Booklet No. G57 sent on request.

When it is an industrial heating problem always consult

KEITH BLACKMAN LTD., MILL MEAD ROAD, LONDON, N. 17. T.N.: TOTTENHAM 4522. T.A. : KEITHBLAC, PHONE, LONDON

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Cookers, Portable Boiling Rings, Water Heaters, Fires, Radiators, Canteen Equipment, Boilers, Overhead Radiant Heaters, Infra-Red Drying Units, Furnaces etc.

Please send enquiries to

GEO. BRAY & CO., LTD.
LEICESTER PLACE,
LEEDS·2

Printed by Straker Brother · id., E.C.2, for Walter King Limited, 11, Bolt Court, Fleet Street, London, E.C.4.—Wednesday, June 2, 1948.

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for

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WEST'S GAS IMPROVEMENT CO. LTD.

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Telegrams: Stoker, Manchester

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COLUMBIA HOUSE, ALDWYCH, W.C. 2

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The British Gas Council's memorandum to the Chancellor of the Exchequer declares :—

"The instantaneous type of water heater—which can only be operated by gas—is highly efficient, and there is no waste of fuel."

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